Summary table of projects and results of research activities - Year 2024

Cur. No.	Project	RD Contract No.	Product resulting from the RD activity (Technology / Method / Methodology)	Technological maturity level
1.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for the purification of wastewater / sludge and the valorization of renewable resources in the processes of wastewater treatment - WATERTREAT - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 03 01	Solar PMR experimental model for wastewater treatment tested (Research Report)	TRL 3
2.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for the purification of wastewater / sludge and the valorization of renewable resources in the processes of wastewater treatment - WATERTREAT - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 03 01	Experimental model for sludge treatment with percarbonate and tested ozone (Research Report)	TRL 3
3.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for the purification of wastewater / sludge and the valorization of renewable resources in the processes of wastewater treatment - WATERTREAT - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 03 01	Experimental SBR model for the treatment of leachate generated from municipal waste deposits tested (Research Report)	TRL 3
4.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for the purification of wastewater / sludge and the valorization of renewable resources in the processes of wastewater treatment - WATERTREAT - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 03 01	Studiu experimental privind integrarea microalgelor in procese de epurare a apelor uzate (Raport de cercetare)	TRL 3
5.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for the purification of wastewater / sludge and the valorization of renewable resources in the processes of wastewater treatment - WATERTREAT - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 03 01	Experimental study on the integration of microalgae in wastewater treatment processes (Research Report)	TRL 3
6.	Methods/methodologies for the structural identification, chemical confirmation and analytical quantification of emerging anthropogenic contaminants in various environmental components in accordance with the new European environmental directives - ECOTRANS - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 01 01	Developed and validated electrochemical methods for the quantification of persistent emerging pollutants such as perfluoroalkyl sulfonic acids in aqueous matrices by voltammetric and amperometric detection	TRL 4
7.	Methods/methodologies for the structural identification, chemical confirmation and analytical quantification of emerging anthropogenic contaminants in various environmental components in accordance with the new European environmental directives - ECOTRANS - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 01 01	Quantitative method for the detection and quantification of Cr species in various water matrices (drinking, surface water and underground water) using the HPLC-ICP-MS technique	TRL 4

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8.	Methods/methodologies for the structural identification, chemical confirmation and analytical quantification of emerging anthropogenic contaminants in various environmental components in accordance with the new European environmental directives - ECOTRANS - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 01 01	Quantitative method for the quantification of iodo-trihalomethane compounds in potable water	TRL 4
9.	Advanced waste recycling through experimental models dedicated to the circular economy - SMARTWASTE - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 04 01	Experimental study on the removal of specific compounds found in the composition of waste from the leather industry	TRL 2
10.	Advanced waste recycling through experimental models dedicated to the circular economy - SMARTWASTE - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 04 01	Experimental study regarding the development and testing of adsorbent materials and/or catalysts obtained from ash	TRL 2
11.	Advanced waste recycling through experimental models dedicated to the circular economy - SMARTWASTE - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 04 01	Experimental study for the development of recipes for obtaining alternative fuels, by using mixtures of different proportions of waste	TRL 3
12.	Environmental biotechnologies for supporting the green transition and adapting to the principles of the circular economy – EMBRACE – Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 03 02	Technology and experimental model installation of waste water treatment from decentralized and/or seasonal sources validated	TRL 4
13.	Innovative technologies for advanced removal of inorganic and organic micropollutants such as arsenic and chlorine disinfection by-products (trihalomethanes and haloacetic acids) in the context of the implementation of the new European legislation on drinking water quality – AQUASTECH-Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 03 03	Experimental study on the removal efficiencies of THMs and HAAs from water using zerovalent iron and zerovalent iron sonolysis	TRL 3
14.	Innovative technologies for advanced removal of inorganic and organic micropollutants such as arsenic and chlorine disinfection by-products (trihalomethanes and haloacetic acids) in the context of the implementation of the new European legislation on drinking water quality – AQUASTECH-Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 03 03	Experimental treatability study carried out at the laboratory level in order to analyze the aspects related to the advanced removal of arsenic from deep water sources intended for human consumption selected from the aquifer of the Western Zone of Romania	TRL 3

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15.	Eco-friendly solutions for monitoring and protecting the biodiversity of integrative systems, as well as for preventing their destruction - ECO-PHARMA - Phase 3/2024	Contract de finantare nr. 3N/2022 PN 23 22 02 01	Studiu experimental de evaluare a efectelor antimicrobiene a extractelor vegetale de rozmarin si coaja de portocala, comparativ cu compusii farmaceutici existenti	TRL 3
16.	Assessment of the impact of climate change in urban and peri-urban areas in Romania - priority measures regarding climate resilience - RCUP - Phase 3/2024	Financing contract no. 3N/2022 PN 23 22 02 02	Study regarding the conduct of field and laboratory investigations to establish the quality of environmental factors in urban and peri-urban areas analyzed in 2024 within the experimental field related to the project Evaluation of the impact of climate change in urban and peri-urban areas in Romania-priority measures regarding climate resilience, the updated RCUP georeferenced database	TRL 4
17.	New eco-nano-technologies for the elimination of halogenated organic compounds from wastewater using advanced oxidation and reduction processes and anaerobic biodegradation processes" (Acronym: NEWNANOAOPS)	PN-III-P2-2.1-PED	Advanced degradation technology of hexachlorocyclohexane isomers from aqueous systems	TRL 4
18.	Methods/methodologies for structural identification, chemical confirmation and analytical quantification of emerging anthropogenic contaminants in various environmental components in accordance with the new European environmental directives – ECOTRANS - Phase 3/II/2024	PN 23 22 01 01	Qualitative method for identifying some polymers existing in microplastics present in different water matrices using vibrational spectroscopy	TRL4
19.	Methods/methodologies for structural identification, chemical confirmation and analytical quantification of emerging anthropogenic contaminants in various environmental components in accordance with the new European environmental directives – ECOTRANS - Phase 3/II/2024	PN 23 22 01 01	Quantitative method for detection and quantification of HG species from various water matrices (drinking water, surface water and groundwater) using HPLC-ICP-MS technique	TRL4
20.	Methods/methodologies for structural identification, chemical confirmation and analytical quantification of emerging anthropogenic contaminants in various environmental components in accordance with the new European environmental directives – ECOTRANS - Phase 4/2024	PN 23 22 01 01	Quantitative method for the detection of unconventional organic pollutants such as perfluoroalkyl sulfonic acids in dehydrated sludge from wastewater treatment plants	TRL4
21.	Methods/methodologies for structural identification, chemical confirmation and analytical quantification of emerging anthropogenic contaminants in various environmental components in accordance with the new European environmental directives – ECOTRANS - Phase 4/II/2024	PN 23 22 01 01	Quantitative method for the detection of azole antifungal compounds from residual sludge	TRL4

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22.	Methods/methodologies for structural identification, chemical confirmation and analytical quantification of emerging anthropogenic contaminants in various environmental components in accordance with the new European environmental directives – ECOTRANS - Phase 5.1/2024	PN 23 22 01 01	Quantitative method for the detection and quantification of Hg species in sediment using the HPLC-ICP-MS technique	TRL4
23.	Eco-friendly solutions for monitoring and protecting the biodiversity of integrative systems, as well as for preventing their destruction - ECO-PHARMA - Phase 3/II/2024	PN 23 22 02 01	Experimental study evaluating the antimicrobial effects of commercial and laboratory-prepared sage extracts compared to existing pharmaceutical compounds	TRL3
24.	Eco-friendly solutions for monitoring and protecting the biodiversity of integrative systems, as well as for preventing their destruction - ECO-PHARMA - Phase 4/2024	PN 23 22 02 01	Study on the laboratory implementation of CCOCr and BOD_5 determination methods aligned with the new international standards in force	TRL3
25.	Eco-friendly solutions for monitoring and protecting the biodiversity of integrative systems, as well as for preventing their destruction - ECO-PHARMA - Phase 4/2024	PN 23 22 02 01	Experimental study to evaluate the degradation capacity of new eco-friendly sage-based compounds	TRL3
26.	Eco-friendly solutions for monitoring and protecting the biodiversity of integrative systems, as well as for preventing their destruction - ECO-PHARMA - Phase 4/2024	PN 23 22 02 01	Working protocol for CCOCr and BOD_5 analysis	TRL3
27.	Eco-friendly solutions for monitoring and protecting the biodiversity of integrative systems, as well as for preventing their destruction - ECO-PHARMA - Phase 4/II/2024	PN 23 22 02 01	Experimental study to evaluate the ecotoxicological effects of commercial and laboratory-prepared sage extracts	TRL3
28.	Climate change impact assessment in urban and periurban areas in Romania-priority measures on climate resilience-RCUP-Phase 3/II/2024	PN 23 22 02 02	Study regarding the investigations carried out on the quality of environmental factors within the experimental field for the 3 urban/periurban areas selected as Case Studies: Tulcea, Galati and Ploiesti, which contains the updated RCUP georeferenced database	TRL4
29.	Climate change impact assessment in urban and peri-urban areas in Romania-priority measures on climate resilience-RCUP-Phase 4/2024	PN 23 22 02 02	The RCUP georeferenced database updated with the results of the investigations carried out on the quality of environmental factors and with the information of IoT sensors in the	TRL4

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			urban/periurban area of Tulcea.	
30.	Climate change impact assessment in urban and peri-urban areas in Romania-priority measures on climate resilience-RCUP-Phase 4/II/2024	PN 23 22 02 02	The RCUP georeferenced database updated with the results of the investigations carried out on the quality of environmental factors and with the information of IoT sensors in the urban/periurban area of Galati and Ploiesti cities. Semester II - 2024 - Part II	TRL4
31.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for wastewater / sludge treatment and renewable resources in wastewater treatment processes-WATERTREAT-Phase 3/II/2024	PN 23 22 03 01	Solar PMR experimental model for wastewater treatment tested - part 2	TRL3
32.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for wastewater / sludge treatment and renewable resources in wastewater treatment processes-WATERTREAT-Phase 3/II/2024	PN 23 22 03 01	Experimental model of percarbonate and ozone treatment tested – part	TRL3
33.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for wastewater / sludge treatment and renewable resources in wastewater treatment processes-WATERTREAT-Phase 3/II/2024	PN 23 22 03 01	Experimental model for obtaining materials with complexing properties tested - part 2	TRL3
34.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for wastewater / sludge treatment and renewable resources in wastewater treatment processes-WATERTREAT-Phase 4/2024	PN 23 22 03 01	Experimental study on the parameters of solar photocatalysis and membrane separation phases	TRL3
35.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for wastewater / sludge treatment and renewable resources in wastewater treatment processes-WATERTREAT-Phase 4/2024	PN 23 22 03 01	Experimental study on establishing the optimal parameters of the sedimentation process	TRL3
36.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for wastewater / sludge treatment and renewable resources in wastewater treatment processes-WATERTREAT-Phase 4/2024	PN 23 22 03 01	Experimental study on the parameters of the experimental model for post/pre-treatment of biological effluent from biological leachate treatment – oxidation in the Fe(II)/peroxides +/- UV system	TRL3
37.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for wastewater / sludge treatment and renewable resources in wastewater treatment processes-WATERTREAT-Phase 4/2024	PN 23 22 03 01	Experimental study on the influence of the characteristics of the influencers on the biophotolysis processes and the	TRL3

Cur. No.	Project	RD Contract No.	Product resulting from the RD activity (Technology / Method / Methodology)	Technological maturity level
			establishment of the variation model of hydrogen production during the purification sequences	
38.	Specialized and sustainable technologies, based on advanced oxidation processes, intended for wastewater / sludge treatment and renewable resources in wastewater treatment processes-WATERTREAT-Phase 4/2024	PN 23 22 03 01	Experimental study on the parameters of the metal content reduction technology in wastewater using new functionalized cellulosic materials	TRL3
39.	Environmental biotechnologies to support the green transition and adaptation to the principles of the circular economy – EMBRACE-Phase 3/II/2024	PN 23 22 03 02	Experimental model wastewater treatment plant from decentralized or seasonal sources validated at laboratory level – part II	TRL4
40.	Environmental biotechnologies to support the green transition and adaptation to the principles of the circular economy – EMBRACE-Phase 4/2024	PN 23 22 03 02	Experimental model of intensive composting validated under controlled conditions – part I	TRL4
41.	Environmental biotechnologies to support the green transition and adaptation to the principles of the circular economy – EMBRACE-Phase 4/II/2024	PN 23 22 03 02	Experimental model of intensive composting validated under controlled conditions – part II	TRL4
42.	Innovative technologies for the advanced removal of inorganic and organic micropollutants such as arsenic and by-products of chlorine disinfection (trihalomethanes and haloacetic acids) in the context of the implementation of the new European legislation on drinking water quality - AQUASTECH - Phase 3/II/2024	PN 23 22 03 03	Experimental study for the identification and quantification of arsenic species present in selected deep water sources (from the Western Rural Area of Timis County) and for the testing of the experimental model for arsenic removal (As(III), As(V)) by aeration, preoxidation, coagulation-flocculation, decantation and rapid filtration on sand and natural zeolite	TRL3
43.	Innovative technologies for the advanced removal of inorganic and organic micropollutants such as arsenic and by-products of chlorine disinfection (trihalomethanes and haloacetic acids) in the context of the implementation of the new European legislation on drinking water quality - AQUASTECH - Phase 3/II/2024	PN 23 22 03 03	Technical study for experimental model testing on the removal of haloacetic acids from water by UV Fenton photolysis	TRL3
44.	Innovative technologies for the advanced removal of inorganic and organic micropollutants such as arsenic and by-products of chlorine disinfection (trihalomethanes and haloacetic acids) in the context of the implementation of the new European legislation on drinking water quality - AQUASTECH - Phase 4/2024	PN 23 22 03 03	Experimental study for establishing the specific parameters of the processes of aeration-preoxidation-coagulation-flocculation-decantation and speciation of arsenic present in two sources selected deep water (from the western rural area of Timis County)	TRL3
45.	Innovative technologies for the advanced removal of inorganic and organic micropollutants such as arsenic and by-products of chlorine disinfection (trihalomethanes and haloacetic acids) in the context of the implementation of the new European legislation on drinking water quality - AQUASTECH - Phase 4/II/2024	PN 23 22 03 03	Experimental study of HAAs and THMs removal from water by sonolysis and Fenton photolysis and zerovalent iron reduction	TRL3

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46.	Advanced waste recycling through experimental models dedicated to the circular economy – SMARTWASTE - Phase 3/II/2024	PN 23 22 04 01	Experimental study on the removal of specific compounds found in the composition of waste from the leather industry - part II	TRL2
47.	Advanced waste recycling through experimental models dedicated to the circular economy – SMARTWASTE - Phase 4/2024	PN 23 22 04 01	Experimental study regarding the elaboration and testing of the experimental model for wastewater treatment	TRL3
48.	Advanced waste recycling through experimental models dedicated to the circular economy – SMARTWASTE - Phase 4/2024	PN 23 22 04 01	Experimental study on the selection and testing of alternative fuel formulas obtained from mixtures of municipal waste with different wastes with high combustible properties – part I	TRL3
49.	Advanced waste recycling through experimental models dedicated to the circular economy – SMARTWASTE - Phase 4/II/2024	PN 23 22 04 01	Experimental study on the selection and testing of alternative fuel formulas based on municipal waste and technological waste of polyester fibres – part II	TRL3
50.	Microplastics – Ecotoxicological effects and mechanisms of action in fish species Cyprinus carpio – MicroPlasFish, Stage 3/2024	PN-III-P1-1.1-TE-2021-007	Study on histopathological changes in fish organs exposed to microplastics	TRL3
51.	Early epidemiological warning system of SARS-CoV-2 trends in untreated wastewater as an indicator of the spread of circulating variants in the population – WARNING, Stage 3/2024	PN III-P2-2.1-PED-2021-4131	Study on the demonstration of the concept of early epidemiological warning of the increase or decrease in the concentration of SARS-Co-V-2 and its circulating variants in untreated wastewater and the correlation of the results with clinical data	TRL3
52.	Proto-Opto-Electro-Mechanical Hybrid Systems for Generation-Next Bionic Devices, acronim proiect: PROGENY	Nr. 899205 / 2020, Grant agreement nr. 899205/2020	Ecotoxicolo Wastewater treatment and resource recovery technology based on granular sludge with microalgae gical study of newly synthesized surfactants	TRL3
53.	Granular activated algae technology for wastewater treatment and resources recovery - GRAALrecovery	RO-NO-2019-0691	Wastewater treatment and resource recovery technology based on granular sludge with microalgae	TRL5
54.	Continuous flow-fed granular aerobic sludge bioreactor for wastewater treatment – ConFlowAGS	PNCDI III – Nr. 12PED/2017	Continuous flow-fed bioreactor for wastewater treatment with granular aerobic sludge. Patent No. 133498 / 30.09.2024 BOPI 9/2024	TRL4