UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3RD GLOBAL SUMMIT ON CLIMATE CHANGES AND SUSTAINABILITY

## SEPTEMBER 10-11, 2025
## BARCELONA, SPAIN

GSCCS-2025
September 10-11, 2025 | Barcelona, Spain

ISBN: 978-1-917892-18-6

**Venue:**
**Hotel SB BCN Events,**
**Barcelona, Spain**

THE CPD GROUP
ACCREDITED PROVIDER
#778533
Verify @ https://thecpdregister.com

**Day -1 Wednesday**

# International Conference

## September 10-11, 2025 | Barcelona, Spain

**Registrations & Opening Cermony (09:00-10:00)**

**Technical Session-I (10:00-11:00)**

| | |
|---|---|
| **(Keynote) 10:00-10:30** | **Advancing Microalgae Biotechnology: Integrating Food Waste for Sustainable Bioenergy Production**<br>**Abdelfatah Abomohra,** University of Hamburg, Germany |
| **10:30-11:00** | **Transforming small holder irrigation systems from dysfunctional to functional climate smart agricultural systems and integration into circular food systems**<br>**Henning Bjornlund,** Australian National University, Australia |

**Refreshment Break & Group Photo (11:00 - 11:30)**

**Poster Presentation (11:30-12:30)**

| | |
|---|---|
| **Poster-I** | **Studying the affinity of pharmaceutical substances to accumulate in the Danube River sediments**<br>**Valentina Andreea Calmuc,** Dunarea de Jos University Galati, Romania |
| **Poster-II** | **Evidence of microplastic contamination in Alosa immaculata fish from the Lower Danube River**<br>**Madalina Calmuc,** Dunarea de Jos University Galati, Romania |
| **Poster-III** | **Individual and Combined Behaviors of Persistent and Emerging Pollutants in Sediments**<br>**Stefania-Adelina Milea,** Dunarea de Jos University of Galati, Romania |
| **Poster-IV** | **Comparative Study of Acid Mixtures for Sediment Digestion in TXRF: Focus on Heavy Metal Recovery and Accuracy**<br>**Nina-Nicoleta Lazar,** Dunarea de Jos University of Galati, Romania |
| **Poster-V** | **Removal of Phenol Red Dye from Polluted Water Using Sustainable Low-Cost Sewage Sludge Activated Carbon: Adsorption and Reusability Studies**<br>**Eid Hamed Alosaimi,** University of Bisha, Saudi Arabia |

**Day -1 Wednesday**

# International Conference

## September 10-11, 2025 | Barcelona, Spain

**Lunch @ Restaurant (12:30 -13:30)**

**Technical Session-II (13:30-18:20)**

| | |
|---|---|
| **13:30-14:00** | **Sustainable Finance: Shaping a Better World**<br>**Diana George,** University of Surrey, UK |
| **14:00-14:30** | **Responses of tropical forest soil organic matter pools to shifts in precipitation patterns**<br>**Feng Sun**, South China Normal University, China |
| **14:30-15:00** | **Predicting changes in wetland vegetation by 2100 in the context of climate change: the case of the brière marshes (France, Loire-Atlantique)**<br>**Thomas LAFITTE,** University of Nantes, France |
| **15:00-15:30** | **Soil biotic diversity response to precipitation changes with implications for soil function recovery**<br>**Rentao Liu,** Ningxia University, China |

**Refreshment Break (15:30-15:50)**

| | |
|---|---|
| **15:50-16:20** | **Preliminary Study on PCC-Chitosan's Ability to Enhance Microplastic Excretion in Human Stools from Healthy Volunteers**<br>**Claudio Casella,** University of Oviedo, Spain |
| **16:20-16:50** | **Therapeutic potential of siRNA PMP22-SQ nanoparticles for Charcot-Marie-Tooth 1A neuropathy in rodents and non-human primates**<br>**Liliane Massade,** Université Paris-Saclay, France |
| **16:50-17:20** | **The EU's Green Deal and Challenges in Croatia: A Study of Air Quality Deterioration and the Role of Renewable Energy in Driving Sustainable Development**<br>**Mirsada Cehic,** University of Applied Sciences in Security and Safety, Croatia |
| **17:20-17:50** | **The challenge of predicting energy demand in the Charging Stations Control Center (CSCC)**<br>**Victor Fernandez,** Department of Applied Economics, Universitat de Valencia, Spain |

17:50-18:20

**Towards Sustainable Management of Small Tuna Fisheries: Atlantic Bonito in Senegalese Waters**

**Ousmane Sarr**, Shanghai Ocean University, China

Pannel Discussions

Day-1 Concludes

# Virtual Scientific Program

Central European Time


**Join Zoom Meeting**

**Meeting ID: 854 2132 7198**

**Passcode: Urf@2025**

**Day -2**
**Thursday**

# International Conference

## September 10-11, 2025 | Barcelona, Spain

**09:00-09:30**

**Harnessing AI for ESG Integration in strategic Decision-Making**

**Ibrahim Abddalah,** Torrens University, Australia

---

**09:30-10:00**

**Simulation Study on Reservoir Stimulation of Multi-horizontal Wells for Gas Hydrate Production in Low-permeability Reservoirs**

**Li Xiaoyang,** Chinese Academy of Geological Sciences, China

---

**10:00-10:30**

**Turning Plastic Waste into Standard Automobile Fuel: A Techno-Economic Assessment**

**Md Jahirul Islam,** Central Queensland University, Australia

**Refreshment Break (10:30-10:50)**

**10:50-11:20**

**Insights into the relationship between nitrogen assimilation and lipid accumulation in algae**

**Huiying Zhang,** Fujian Agriculture and Forestry University, China

---

**11:20-11:50**

**Study on the Thermal-Seepage-Chemical Coupling Mechanism during the Oxidation and Spontaneous Combustion of Gas-Containing Coal**

**Tan Zhang,** China Jiliang University, China

---

**11:50-12:20**

**Chemical-Soil-Biological Engineering and Biogeosystem Technique Methodology in Ecosphere Sustainability**

**Valery P. Kalinichenko,** Institute of Fertility of Soils of South Russia, Russia

---

**12:20-12:50**

**Understanding desiccation tolerance as a tool for climate smart agriculture**

**Jill M. Farrant,** Universitiy of Cape Town, South Africa

**Lunch @ Restaurant (12:50-13:30)**

**13:30-14:00**

**A Techno-Economic Study of Biomass Gasification in Microgrids for Small Islands Energy Supply using HOMER**

**Lina Montuori,** Universitat Politècnica de València, Spain

**Day -2**
**Thursday**

# International Conference

## September 10-11, 2025 | Barcelona, Spain

**14:00-14:30**

**Alternative method to achieve full density in a short time for hard stainless-steel powdered materials**

**Mohammed Qasim Kareem,** Miskolc University, Hungary

---

**(Keynote)**
**14:30-15:00**

**AI-Powered Renewable Energy Forecasting and Optimising PV Systems for the Next Generation: Unparalleled Precision**

**Manoharan Madhiarasn,** Aarhus University, Denmark

---

**15:00-15:30**

**Modelling mercury risks in the Amazon with new evidence for policy action**

**Vitor Sousa Domingues,** Brazilian Institute of Environment and Renewable Natural Resources, Brazil

**Refreshment Break (15:30-15:50)**

**15:50-16:20**

**Monitoring threats to wildlife using predictive analyses and visualizations from remote sensing data**

**Kristen Bellisario,** Purdue University, USA

---

**16:20-16:50**

**Sustainable Energy Generation from Plastic Waste: A Pyrolysis Approach for Industry**

**Dimitrios-Aristotelis Koumpakis,** Aristotle University of Thessaloniki, Greece

---

**16:50-17:20**

**Towards AI-Driven Discovery of Renewable Energy Materials: Thermoelectrics, Semiconductors, Catalysts, and More**

**Ankit Agrawal,** Northwestern University, USA

---

**17:20-17:50**

**Simulation of Residual Agroforestry Biomass Supply Chains: A Digital Dynamic Mapping**

**Bernardine Chigozie Chidozie,** University of Aveiro, Portugal

---

**17:50-18:20**

**Sustainable Energy Generation from Plastic Waste: A Pyrolysis Approach for Industry**

**Dimitrios-Aristotelis Koumpakis,** Aristotle University of Thessaloniki, Greece

**Closing Remarks**

**Day-02 Concludes**

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Diana George**

University of Surrey, Guildford, Surrey, GU2 7XH

## Sustainable Finance: Shaping a Better World

In the face of accelerating climate change and growing environmental instability, the financial sector plays a pivotal role in steering society toward sustainability. This presentation explores the critical intersection of climate risk and financial risk, underscoring why investors must care about the global transition to a low-carbon economy. With a focus on sustainable finance and macro stewardship, the talk outlines how capital markets—valued at $456 trillion—can be mobilized to meet the $110 trillion transition cost to net-zero by 2050.

The session covers the fundamentals of sustainable finance, including the integration of ESG factors into investment decisions, the impact of physical, transition, and litigation risks, and the emerging evidence that ESG performance enhances financial returns. It further examines systemic challenges such as regulatory inconsistencies, greenwashing, and structural incentives within the financial system that hinder progress.

The presentation concludes with a call to action: finance professionals and future leaders must be bold, curious, and impactful in reshaping investment practices and driving systemic change. Sustainable finance is not a trade-off between profit and purpose—it is the foundation for long-term value creation and global resilience.

### Biography

Diana George is a Doctoral Practitioner in Sustainable Finance at the University of Surrey, where her research focuses on the impact of institutional investors' macro stewardship on financial system stability and sustainability. With over 25 years of experience in global finance, including roles in investment banking and hedge funds, Diana brings a practitioner's insight into sustainable investing. Diana held senior roles at leading investment banks and hedge funds, specializing in event-driven strategies. She has also launched and scaled start-ups in alternative investments and executive coaching initiatives, and currently collaborates with Aviva Investors on policy-focused research. Diana holds an MBA with Distinction from University of Surrey, is a Sustainability Fellow at the Institute for Sustainability, and is an active lecturer and speaker on sustainable finance.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Diana-George

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Thomas LAFITTE**

University of Nantes, Loire-Atlantique, FRANCE

## Predicting changes in wetland vegetation by 2100 in the context of climate change: the case of the brière marshes (France, Loire-Atlantique)

Coastal freshwater wetlands are under threat from the effects of climate change. As one of France's nationally important wetlands, the Brière marshes represent a considerable biodiversity reserve for flora and fauna. In recent years, however, changes have been observed in the composition of plant communities, associated with more marked climatic variations. Local stakeholders would like to have an overview of the landscape mosaics between now and 2100 as a function of management results and climatic factors. After first identifying the climatic factors that regulate a wetland, the regional climate indicators for a +3°C world were broken down (changes in rainfall patterns, temperature increases) in order to build a climate model for the Brière in 2100. The effects of rising sea levels and the risk of salinisation of coastal wetlands are also assessed as related effects of climate change. Then, on the basis of a habitat map drawn up during the course of the thesis, a matrix of transitions is drawn up, with two main families of scenarios: salinisation of the marshes associated with the maintenance of economic activities, and on the other hand a fight against marine intrusions associated or not with the maintenance of agricultural and tourism activities. Mappings of landscape recompositions are proposed, with overviews of the new species that could move and those that would not survive. Particular attention is paid to invasive exotic species, which are very present in this marsh. This approach should enable local managers to anticipate current decisions and future changes.

### Biography

Thomas Lafitte is a PhD candidate in fourth year of PhD CIFRE studentship funding co-financed by ANRT (national research-technology association) and the European Regional Development Fund (ERDF) with the french natural regional Park of Brière.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Thomas-Lafitte

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Valentina Andreea Calmuc**[1], Madalina Calmuc[1], Georgiana Ghisman[3], Catalina Iticescu[1,2], Puiu-Lucian Georgescu[1,2]

[1]REXDAN Research Infrastructure Dunarea de Jos, University of Galati, George Cosbuc Street, no. 98, Galati, Romania
[2]Faculty of Science and Environment, "Dunărea de Jos" University of Galați, 800008 Galati, Romania
[3]Interdisciplinary Research Centre in the Field of Eco-Nano Technology and Advance Materials CC-ITI, Faculty of Engineering, "Dunarea de Jos"University of Galati, 47 Domneasca Street, 800008 Galati, Romania

## Studying the affinity of pharmaceutical substances to accumulate in the Danube River sediments

Sediment is considered the final component of the aquatic environment in which most pollutants accumulate. The capacity of chemical compounds to accumulate in sediment depends on their physicochemical properties as well as on the morphological structure of the sediments. The distribution of organic contaminants in sediments is influenced in particular by the molecular weight of the compound, the concentration in which it is found in the aquatic environment, the pKa values and the octanol/water partition coefficient (log Kow) of each pollutant. The present work aims to study the capacity of different classes of pharmaceutical compounds to accumulate in sediments sampled from the Danube River depending on their morphological structure. For this purpose, sediment samples with different granulometry were analyzed in order to investigate the presence of pharmaceutical compounds A number of 9 pharmaceutical substances belonging to the class of antibiotics, nonsteroidal anti-inflammatory drugs, antidiabetics, antiepileptics and psychoactive compounds were analyzed. The results obtained revealed a low affinity of this class of emerging pollutants for the solid phase of the aquatic environment represented by sediment. This is mainly due to the low values of the octanol/water partition coefficient (log Kow) of the pharmaceutical compounds analyzed in the present study. However, in some sediment samples the presence of pharmaceutical residues such as caffeine, metformin and carbamazepine was identified. Most pharmaceutical compounds were identified in sediment samples that presented fine-grained particles.

### Biography

Valentina – Andreea Călmuc PhD in Industrial Engineering, "Dunărea de Jos" University of Galați, Romania, from 2024. She is currently a research assistant within the REXDAN Infrastructure where she is the head of the chromatography laboratory and her main research field is the analysis of pharmaceutical compounds from environmental samples. She has published 21 papers in Web of Sciecnce indexed journals. Until now, she has been part of the implementation team of 15 national and international projects.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Valentina-Andreea-Calmuc

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Madalina Calmuc**[a], Valentina Andreea Calmuc[a], Nina – Nicoleta Lazar[a], Puiu-Lucian Georgescu[a,b], Catalina Iticesc[a,b]

[a]Rexdan Research Infrastructure, "Dunarea de Jos" University Galati, 800008 Galati, Romania
[b]Department of Chemistry, Physics and Environment, "Dunarea de Jos" University Galati, 800008 Galati, Romania

## Evidence of microplastic contamination in Alosa immaculata fish from the Lower Danube River

In aquatic ecosystems, microplastics have been identified in both abiotic and biotic components. Plastic particles are perceived by benthic fauna and fish as food and are subsequently ingested. Although microplastics are widely excreted following ingestion, there is evidence to suggest that microplastics may be retained in the gut, where they can cause various diseases or even cross the gut wall to be stored in tissues. Gills are also a pathway for microplastics to enter fish organs. The main aim of this study was to assess the presence of microplastics in the gastrointestinal tract and gills of the fish species Alosa immaculata (pontic shad) caught from the Danube River. This anadromous fish species has an important economic value in the Danube Delta and the Lower Danube sector. The identification of microplastic particles was carried out using the micro-FT-IR Spotlight 400 FT-IR, Perkin Elmer, in the REXDAN Research Infrastructure from "Dunarea de Jos" University of Galati, Romania. According to the obtained results, the highest abundance of MPs was identified in the gastrointestinal tract (GIT), respectively 4 particles per specimen. The average concentration of MPs in the GIT was 1.35 particles per specimen. At the gill level, a lower abundance of MPs was reported than in the GIT, with an average of 0.5 particles per specimen, the highest concentration being 2 particles per specimen. In terms of shape and composition of the identified microplastics, fragments and fibers containing polyethylene, polypropylene, and polyester polymers were observed.

### Biography

Madalina Calmuc, Research Assistant at REXDAN Research Infrastructure from "Dunarea de Jos" University of Galati, Romani. BSc in Environmental science (2017), MSc in Environmental monitoring and management (2019) at the Faculty of Science and Environment, „Dunarea de Jos", University of Galati, Romania.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Madalina-Calmuc

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**[1]Stefania-Adelina Milea,** [1,2]Mihaela Timofti, [1,2]Catalina Iticescu, [1,2]Puiu Lucian Georgescu

[1]Dunarea de Jos University of Galati, REXDAN, Romania
[2]Faculty of Sciences and Environment, Department of Chemistry, Physics and Environment, "Dunarea de Jos" University of Galati, Galati, Romania

## Individual and Combined Behaviors of Persistent and Emerging Pollutants in Sediments

As the possible health risks of historical and contemporary industrialization have come to light, public concern over environmental pollution has increased dramatically. The behavior and distribution of hydrophobic compounds in watery environments have drawn much attention due to their toxicity, persistence, and bioaccumulation potential. Pesticides, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, and other hydrophobic substances have a strong affinity for binding to organic materials in soil and sediment. In aquatic systems, hydrophobic substances have high partition coefficients onto suspended and bottom sediments, which has a major impact on their distribution, fate, and impacts. Considered to be storage spaces for the accumulation of pollutants from the water column, sediments can vary in structure and content. Sediment is a complex matrix composed of both organic and inorganic components, such as organic matter, clay minerals, and other particles. The analysis of complex matrices necessitates a pragmatic approach, given that matrix effects are multidimensional and subject to a range of influencing factors. This paper reports an integrated framework for the extraction, determination, and quantification of 21 organochlorine pesticides, 16 polycyclic aromatic hydrocarbons, and 6 polychlorinated biphenyls. The extraction of the previously mentioned substances from the freeze-dried sediment was carried out by slightly modifying the well-known QuEChERS method. The target compounds were identified and quantified by gas chromatography combined with a triple-quadrupole mass detector. The experiment's simultaneous investigation of the three distinct classes of contaminants made it easier and better to separate and quantify each of the compounds. This strategy promotes greater analytical efficiency, the evaluation of a comprehensive contamination profile, and the comparability between different contaminants. To further understand these chemicals' effects on ecological and human health, more frequent and comprehensive monitoring of aquatic environments is necessary.

### Biography

Milea Ștefania-Adelina has completed her PhD in the Food Engineering field at the age of 30, at Dunarea de Jos University of Galati. She is now a research assistant at REXDAN Research Infrastructure. She studies different types of contaminants from various complex matrices such as environmental samples, water, air, biota, food, etc., using advanced chromatography techniques. She has published more than 30 papers in reputed journals on current, interesting, and multidisciplinary topics.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Milea-Stefania-Adelina

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Nina-Nicoleta Lazar**[a*], Madalina Calmuc[a], Mihaela Timofti[a,b], Andreea Dorofte[a], Puiu-Lucian Georgescu[a,b]

[a]REXDAN Research Infrastructure, "Dunarea de Jos" University of Galați, 98 George Cosbuc Street, Galați, Romania
[b]Faculty of Sciences and Environment, "Dunarea de Jos" University of Galati, 111 Domneasca Street, Galati, Romania

## Comparative Study of Acid Mixtures for Sediment Digestion in TXRF: Focus on Heavy Metal Recovery and Accuracy

This study aims to optimize the sediment digestion method for chemical analysis by Total Reflection X-ray Fluorescence (TXRF) by testing several acid combinations used in the microwave-assisted digestion of a certified reference material (CRM) of sediment. Four digestion variants were investigated: aqua regia ($HNO_3$:HCl = 2.5:7.5 v/v), concentrated $HNO_3$ (65%), an $HNO_3$:$H_2O_2$ mixture (7:3 v/v), and an $HNO_3$:HCl:$H_2O_2$ mixture (5:3:2 v/v/v). The analysis focused on the determination of Cr, Ni, Cu, Zn, and Pb. Each method's performance was evaluated by calculating the recovery rate, precision, repeatability, and accuracy.

Typically, for complete digestion of silicate matrices like Danube River sediments, hydrofluoric acid (HF) is recommended due to its ability to decompose the resistant mineral fraction. However, HF was deliberately excluded in this study due to the significant hazards associated with its handling and the potential for chemical interferences in TXRF analysis—such as the formation of volatile or insoluble compounds that can compromise measurement accuracy.

The results showed that no single digestion method was optimal for all analytes. Certain acid combinations were particularly effective for specific elements, while others yielded better performance for different targets. This variability underscores the importance of tailoring the digestion protocol to the specific elements of interest. The study thus provides a solid foundation for the rational selection of a digestion method suitable for Danube River sediments in the context of TXRF analysis.

### Biography

Nina Nicoleta Lazar completed her PhD at the age of 30 years at Dunarea de Jos University of Galati, Romania. She is a research assistant at REXDAN Research Infrastructure. She has published 9 papers as first author and 18 papers as co-author in reputed journals, having an h-index of 10 on Google Scholar and Scopus, and 9 on WOS. She is part of the research team of three Horizon projects, with a research work experience of 7 years in multiple national and international research projects.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Nina-Nicoleta-Lazar

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Jill M. Farrant**

Department of Molecular and Cell Biology, Universitiy of Cape Town, South Africa

## Understanding desiccation tolerance as a tool for climate smart agriculture

Drought poses a significant threat to global agriculture, with climate change driving increased aridification across key food-producing regions. This challenge is particularly critical in Africa, where approximately 95% of agriculture depends on rainfall. Most conventional crops do not survive even moderate water loss, and while some progress has been made in improving drought resistance, these adaptations often fail under severe and prolonged dry conditions. A promising avenue for enhancing crop resilience involves the study of resurrection plants—approximately 240 species of Angiosperms that exhibit vegetative desiccation tolerance. Understanding the molecular and physiological mechanisms underlying this phenomenon could pave the way for developing crops with enhanced resilience to water deficit stress.Using a multidisciplinary systems biology approach, we have investigated how various resurrection plant species, each serving as a model for crop improvement, regulate molecular and physiological responses to withstand extreme drought conditions. Recent research has also focused on root-associated microbiomes and their potential role in desiccation tolerance, with implications for producing natural biostimulants that support plant growth under water-scarce conditions. In this presentation I will provide an overview of the molecular physiological processes associated with desiccation tolerance in resurrection plants and their associated microbiomes and point to future applications for improving agricultural sustainability in increasingly drought prone environments.

### Biography

Jill Farrant holds a South African Research Chair in “Systems Biology Studies on Plant Desiccation Tolerance for Food Security” and is an acknowledged world leader in the field of plant desiccation tolerance. She has received considerable recognition for her research, including being a Luareatte of the L’Oreal-UNESCO For Women in Science awards and the Humbolt Foundation Georg Foster award for a life time of excellent research in a developing/transitioning country that has value for all humanity.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Jill-M-Farrant

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**LI, Xiaoyang**[1];Wang, Yingli[2]

[1]Institute of Exploration Techniques, Chinese Academy of Geological Sciences, Langfang 065000, China;
[2]China University of Geosciences(Beijing), Beijing10083, China.

## Simulation Study on Reservoir Stimulation of Multi-horizontal Wells for Gas Hydrate Production in Low-permeability Reservoirs

The feasibility of hydrate exploitation technology has been verified by two rounds of trial productions in the South China Sea, but it is also faced with the problem of low gas production efficiency. Therefore, this paper proposed four different hydrate production cases with multi-horizontal wells, and established simulation models. Then the influence patterns of reservoir stimulation and offset distances on hydrate dissociation, saturation change and pressure distribution were studied. To understand hydrate dissociation behaviors and production performances, the coupling effects of multi-horizontal wells were discussed. Through simulation, the conclusions could be drawn: (1) Hydrate reservoir stimulation could effectively increase gas production. In these four production models, the cumulative gas production in Case C (multi-horizontal wells + reservoir stimulation) was 5.27 times that of Case A (only multi-horizontal wells) in 330 days. However, in Case D with screen completions the gas output was 15.58% less compared with Case C. (2) Different offset distances of horizontal wells had a relatively minor impact on cumulative gas yield and daily gas capacity. In addition, the variation range of hydrate saturation changed with offset distances of horizontal wells, indicating that hydrate dissociation occurred mainly around horizontal wells and fractures. (3) Considering inter-wells coupling, the daily gas rate and cumulative gas production of inner wells were higher than outer wells, and the cumulative gas volume increased by 6.4% in 330 days. Temporally and spatially, the hydrate saturation variation between wells was significantly faster than the outward expansion from horizontal wells. Moreover, nearer to the axis of the horizontal wells, the variation in hydrate saturation was more pronounced. These results could provide theoretical data to optimize marine hydrate development with multi-horizontal wells.

### Biography

Li Xiaoyang has completed his MD at the age of 25 years from Jilim University and he is pursuing a doctoral degree at China University of Geosciences in Geological Engineering. He is the senior engineer of Institute of Exploration Techniques, Chinese Academy of Geological Sciences. He has published more than 25 papers in reputed journals and has been serving as an young editorial board member of repute.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Li-Xiaoyang

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Huiying Zhang**

College of Life Sciences, Fujian Agriculture and Forestry University, Fuzhou 350002, China

## Insights into the relationship between nitrogen assimilation and lipid accumulation in algae

Understanding the relationship between nitrogen assimilation and lipid accumulation in algae is pivotal for advancing biofuel production and developing sustainable biotechnological applications. Nitrogen availability is a key regulator of algal metabolism, influencing not only growth rates but also the partitioning of carbon flux toward lipid biosynthesis. Under nitrogen-replete conditions, algal cells prioritize protein synthesis and biomass accumulation. Conversely, nitrogen deprivation triggers a metabolic shift that suppresses protein synthesis and enhances carbon storage in the form of lipids, particularly triacylglycerols (TAGs). This review explores the biochemical and molecular mechanisms underlying nitrogen assimilation and its impact on lipid metabolism during algal growth. It highlights the roles of nitrogen transporters, key enzymes in the nitrogen assimilation pathway, and transcriptional regulators that mediate the metabolic switch. Additionally, the review discusses how environmental factors and cultivation strategies can modulate this relationship to optimize lipid yields for biofuel applications. Insights gained from this understanding will inform strain engineering and process optimization efforts aimed at improving the economic viability of algal biofuels.

### Biography

Huiying Zhang has completed her PhD at the age of 27 years from Chongqing University and postdoctoral studies from Tsinghua University School of Environmental Science and Engineering.She is the Chinese expert representative of the Australasia Practical Zero Emissions Society. She has published more than 30 papers in the Chemical Engineering Journal, Science of the Total Environment, Algal Research and other reputed journals and has been serving as an editorial board member of repute. In the International Genetically Engineered Machine Competition, she won 3 gold awards, best hardware awards, best environmental bioremediation awards, and best sustainable development nomination award.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Huiying-Zhang

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Ibrahim Abddalah,** Ali Ahsan, Kleanthes Yannakou

Torrens University, Melbourne, Australia

## Harnessing AI for ESG Integration in strategic Decision-Making

The integration of Environmental, Social, and Governance (ESG) factors into strategic decision-making is pivotal for sustainable business practices, yet challenges such as data complexity and stakeholder alignment persist. This paper investigates the transformative role of Artificial Intelligence (AI) in enhancing ESG integration by leveraging advanced computational techniques to inform corporate strategies. We propose an innovative AI-driven framework that combines machine learning, natural language processing, and predictive analytics to process heterogeneous ESG data, including corporate sustainability reports, stakeholder feedback, and real-time market signals. Our model employs sentiment analysis to gauge public perception and multi-criteria decision-making algorithms to prioritize ESG initiatives aligned with organizational goals. Through a longitudinal case study of global firms in the energy and manufacturing sectors, we demonstrate how AI improves the accuracy of ESG risk assessments, enhances transparency, and supports long-term value creation. The results indicate a 25% improvement in decision-making efficiency compared to traditional methods, with AI identifying previously undetected ESG risks. However, challenges such as algorithmic bias, data standardization, and ethical concerns surrounding AI interpretability remain significant barriers. We address these by incorporating explainable AI techniques to ensure transparency and stakeholder trust. The study also explores the role of AI in mitigating greenwashing by validating ESG claims against third-party data sources. Our findings suggest that AI can bridge the gap between ESG aspirations and actionable outcomes, but its deployment requires robust governance frameworks to ensure fairness and accountability. This research contributes to the growing field of AI-driven sustainability by offering a scalable model for organizations to integrate ESG considerations effectively, fostering resilience and stakeholder confidence in an era of increasing regulatory and societal scrutiny. Future research should focus on cross-industry applications and global standardization of ESG metrics to maximize AI's impact.

### Biography

Dr. Ibrahim Abdallah is a Senior Lecturer in Business, Finance, and Project Management at Torrens University, Australia, with more than 20 years of combined industry and academic experience. His expertise spans artificial intelligence (AI), ESG integration, forensic accounting, financial risk, and project governance. He has coordinated and developed postgraduate programs in project management, procurement, and business analytics, leading large cohorts of international students while achieving consistently high student satisfaction ratings.

In addition to academia, Dr. Abdallah has held leadership roles in the financial services sector, including risk and technology positions at the National Australia Bank. His professional background also extends to forensic accounting and business valuation, where he has provided consulting, governance, and advisory support for both corporate and community organisations.



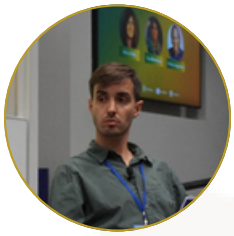
ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Ibrahim-Abdallah

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain



**Vitor Sousa Domingues**
Imperial Colege London, SW7 2AZ, UK
Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), 70818-900, Brazil

Other authors:
Carlos Colmenero (CV Consulting and Analysis)
Maria Vinograd (Imperial College London)
Marcelo Oliveira da Costa (WWF-Brazil)
Rodrigo Balbueno (WWF-Brazil)

## Modelling mercury risks in the Amazon with new evidence for policy action

Mercury contamination from gold mining in the Amazon is posing a serious threat to biodiversity and public health, particularly for traditional communities such as Indigenous and riverine populations who rely heavily on fish as their main source of protein. The lack of data remains a challenge to properly manage contamination. In this context, the US EPA's SERAFM probabilistic model was used to estimate mercury bioaccumulation in fish across 8,259 sub-basins in the Branco, Tapajós and Xingu River basins, covering 27% of the Brazilian Amazon's territory. The findings reveal a pattern of increasing mercury bioaccumulation downstream in the watersheds, driven more by methylation dynamics and ecological characteristics, such as the presence of wetlands, than by the spatial location of mining sites alone. Risk assessments indicate that at least 27.5% of the territory may not comply with national regulatory limits, rising to over 50% in some basins. When local dietary habits are considered, the scenario becomes more critical: up to 49.8% of Indigenous communities in the most affected basins face extremely high health risks, even where current legal thresholds are technically met. These results highlight the urgent need to revise national and international standards, which fail to reflect the Amazon's unique ecological and social realities. We advocate for a shift from fixed contamination thresholds toward regionally adapted, risk-based regulations, along with investment in long-term monitoring, strengthened environmental governance, and culturally appropriate fish consumption advisories. This shift could provide an opportunity to integrate environmental management, public health, and scientific evidence into pragmatic commitments and coordinated action to protect the Amazon ecosystems and people from mercury pollution.

### Biography

Vitor Sousa Domingues completed his second Master's degree in Environmental Technology at Imperial College London, where he was awarded the Nigel Bell Prize for the best thesis on pollution management. He has worked for 10 years at the Brazilian federal environmental agency (Ibama) and has coordinated consultancy projects on mercury pollution control in the Amazon for WWF and The Nature Conservancy.



ISBN: 978-1-917892-18-6
doi.org/10.51219/URForum.2025.Vitor-Sousa-Domingues

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Feng Sun**[1], Linan Fan[1], Guangyan Deng[1], Yakov Kuzyakov[2, 3], Yue Zhang[1], Jinchuang Wang[4], Yingwen Li[5], Faming Wang[5], Zhian Li[5], Akash Tariq[6], Jordi Sardans[7, 8], Josep Penuelas[7, 8], Mei Wang[9*], Changlian Peng[1**]

[1]Guangdong Provincial Key Laboratory of Biotechnology for Plant Development, Guangzhou Key Laboratory of Subtropical Biodiversity and Biomonitoring, School of Life Sciences, South China Normal University, Guangzhou 510631, PR China

[2]Department of Soil Science of Temperate Ecosystems, Department of Agricultural Soil Science, University of Göttingen, Göttingen, Germany

[3]Peoples Friendship University of Russia (RUDN University), Moscow, Russia

[4]Environmental and Plant Protection Institute, Chinese Academy of Tropical Agricultural Sciences, Haikou, Hainan, China

[5]Xiaoliang Research Station of Tropical Coastal Ecosystems, the CAS engineering Laboratory for Ecological Restoration of Island and Coastal Ecosystems, South China Botanical Garden, and Southern Marine Science and Engineering Guangdong Laboratory (Guangzhou), Guangzhou 510000, People's Republic of China

[6]State Key Laboratory of Desert and Oasis Ecology, Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences, Urumqi 830011, China

[7]CSIC, Global Ecology Unit, CREAF-CSIC-UAB, Bellaterra 08193, Barcelona, Catalonia, Spain

[8]CREAF, Cerdanyola del Vallès 08193, Barcelona, Catalonia, Spain

[9]School of Geographic Sciences, South China Normal University, Guangzhou 510631, China

## Responses of tropical forest soil organic matter pools to shifts in precipitation patterns



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Feng-Sun

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

Subsoils contain more than half of global soil organic matter (SOM) stocks. Given that sequestration and turnover processes of SOM are slower in the subsoil than in the topsoil, subsoil carbon (C) stocks are likely to be vulnerable to shifts in precipitation patterns. Therefore, we investigated the responses of different sources of tropical forest soil organic C (SOC) pools to a delayed onset and increased intensity of seasonal precipitation in a 10-year rainfall manipulation experiment. While total SOC varied with soil depth, regardless of shifts in rainfall pattern, we observed that changes in precipitation patterns affected the composition of SOC pools. A delayed wet season increased both the content and proportion of the light fraction C in the SOC at the 0–10 cm depth, potentially due to a decrease in the light fraction decomposition. The delayed wet season also led to a higher content of iron (Fe)-bound organic C, due to impacts on free iron ($Fe^{3+}$) and aluminum oxides. In addition, wetter wet season led to a higher content of lignin phenols in the top- and subsoil (0–70 cm), due to anoxic conditions preventing lignin decomposition. However, this precipitation shift decreased both the content and proportion of fungal necromass in the SOC in the subsoil (50–70 cm), this was attributed to fungal necromass decomposition by microorganisms facilitated by increased N-acquisition enzyme activity. Overall, greater precipitation intensity increased the vulnerability of subsoil C to losses, primarily due to greater microbial decomposition under increased N limitation. Our study demonstrates the subsoil C-cycling processes in shaping SOM stocks to global changes in precipitation patterns.

**Keywords:** Tropical forest, Rainfall changes, Soil carbon fractions, Microbial necromass, Lignin phenols, mineral bound carbon

### Biography

Dr. Feng Sun research focuses on soil ecology, focusing on the biological connections between aboveground and belowground ecosystem communities and their impacts on soil nutrient cycling, particularly the interactions between plants and soil microorganisms and nematodes. Currently, I am primarily researching tropical and subtropical forest ecosystems. Using controlled experiments, data assimilation, and large-scale model simulations, I am investigating the impacts of global change on soil carbon and phosphorus cycling in tropical and subtropical forests at the individual plant, ecosystem, and regional scales.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Feng-Sun

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Professor Henning Bjornlund**

Australian National University, Fenner School, Canberra Australia

## Transforming smallholder irrigation systems from dysfunctional to functional climate smart agricultural systems and integration into circular food systems

ILarge-scale industrial agricultural production systems are inappropriate for sub-Saharan African's conditions and food insecurity and poverty persist. A paradigm shift is needed to place more focus on smallholder production systems. This presentation presents the findings from 12 years of agricultural research-for-development in sub-Saharan Africa as part of the Transforming smallholder Irrigation systems in sub-Saharan Africa (TISA, 2013-23) and Circular Food Systems in Africa (CFS, 2023-26). TISA implemented agricultural innovation platforms and soil moisture monitoring tools in smallholder irrigation schemes in Mozambique, Tanzania and Zimbabwe to improve irrigation efficiency and improve farmer profitability. Over the ten-year period TISA transformed dysfunctional schemes to functional schemes with profitable farmers resilient to climate change induced extreme weather events and other disruptions to their production system such as COVID-19. This presentation argues that functional irrigation systems can become the economic generator for surrounding rural communities by integrating irrigation, rainfed and livestock production, and implementing circular food systems and agroecological concepts. The aim is to decouple resource use from increasing the benefits from resource use. Integrating farm produce into local value chains will increase farmers income and create new job and business opportunities and improve livelihoods and food security. We report on early experiences implementing circular food systems and suggest future research opportunities.

### Biography

Henning Bjornlund, PhD is an honorary Professor at the Fenner School, Australian National University, Canberra, Australia. Over the last 12 years he has worked on the Transforming Irrigation in Southern Africa and the Circular Food System in Africa projects. Until 2023 he was a professor of water policy and management at University of South Australia. From 2005 to 2015 he, jointly with his UniSA position, also held a Canada Research Chair in Water Policy and Management at University of Lethbridge, Alberta, Canada. He has published more than 200 peer reviewed publications.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Henning-Bjornlund

UNITED RESEARCH FORUM
(CONNECT WITH RESEARCH WORLD)

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Dr. Mirsada Cehic,** Dr. Ana Rački Marinkovic

University of Applied Sciences in Security and Safety, Zagreb, Croatia

## The EU's Green Deal and Challenges in Croatia: A Study of Air Quality Deterioration and the Role of Renewable Energy in Driving Sustainable Development

The Industrial Revolution, with its reliance on fossil fuels, led to a significant increase in anthropogenic greenhouse gas (GHG) emissions, compounded by a nearly seven-fold rise in the human population. In response to these critical levels, the European Union (EU) launched the ambitious European Green Deal in 2019, targeting net-zero GHG emissions by 2050. This research explores the impact of these policies, focusing on Croatia, the EU's newest member state. It analyzes trends and statistical data on GHG emissions in Croatia over the past decade and compares them to the EU average.A more detailed analysis of air quality in Zagreb reveals that emissions from the heating season (September to April) significantly increase concentrations of nitrogen dioxide ($NO_2$), particulate matter ($PM_{10}$), and fine particulate matter ($PM_{2.5}$), which often exceed WHO guidelines. This is particularly concerning as Croatia, like other EU countries, relies on fossil fuels for heat energy production and is already facing EU scrutiny for failing to meet air quality standards. The study highlights the legal and public health implications of this non-compliance and underscores the urgent need for cleaner heating solutions. The paper also discusses potential legal actions for failing to comply with EU law and those that migfht be initiated by individuals due to air pollution, emphasizing that non-compliance can lead to significant legal and financial consequences for the state.It analyzes the potential for and current trends in implementing renewable energy sources and energy efficiency measures in residential settings. The paper discusses available national and EU incentives designed to encourage citizens to invest in sustainable energy technologies, which would help reduce GHG emissions, increase energy independence, and stimulate local economies. The study also identifies obstacles faced by households and provides recommendations to improve existing policies, fostering greater public participation in Croatia's energy transition.

### Biography

Dr. Mirsada Ćehić, who holds a PhD in natural sciences from the University of Zagreb, is the Head of the Environmental Protection Department at the University of Applied Sciences in Security and Safety, Zagreb. She has authored numerous scientific papers, participated in research projects, and is an active reviewer and conference organizer. Prof. Dr. Ana Rački Marinković, with a PhD in law from the University of Zagreb, works at the same institution. She has also authored or co-authored several scientific papers published in academic journals and conference proceedings.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Mirsada-Cehic

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

**Liu Rentao**

Ningxia University School of Ecology and Environment, 750021 Yinchuan, Ningxia, China; Universitat CREAF, Cerdanyola del Vallès, E08193 Barcelona, Catalonia, Spain

## Soil biotic diversity response to precipitation changes with implications for soil function recovery

Climate change has profoundly reshaped global biodiversity distributions and community assembly processes, with particularly strong impacts in precipitation-sensitive dryland ecosystems. Yet, how precipitation shifts influence plant and arthropod assembly processes—and how these effects cascade across trophic levels to shape multitrophic β diversity—remains poorly understood. To address this gap, we conducted a rainfall manipulation experiment (±20%, ±40%, ±60%) in a semiarid grassland of northern China, a region highly vulnerable to climatic variability. We examined community assembly processes and β-diversity patterns across three trophic levels: plants, herbivorous arthropods, and predatory arthropods. Our results reveal a precipitation threshold (~380 mm) at which plant community assembly shifts from deterministic to stochastic processes. In contrast, herbivorous and predatory arthropods consistently exhibited stochastic assembly, likely reflecting dispersal-driven buffering mechanisms. Importantly, we found a bottom-up linkage between plant and herbivore β diversity, supporting the "diversity begets diversity" hypothesis. However, this coupling weakened beyond the identified threshold, indicating precipitation-induced decoupling of trophic interactions. Together, these findings suggest that precipitation-driven ecological filtering in plants, combined with cascading effects on arthropods, may increase species turnover and reduce the predictability of community dynamics under wetter conditions. This work provides a critical foundation for developing biodiversity conservation strategies aimed at enhancing ecosystem resilience in the face of accelerating climate change.

### Biography

Liu Rentao has been doing his postdoctoral studies from Universitat CREAF (UAB). He is the research professor of Ningxia University School of Ecology and Environment. He has published more than 52 papers in reputed journals and has been serving as an editorial board member of repute.



ISBN: 978-1-917892-18-6

doi.org/10.51219/URForum.2025.Rentao-Liu

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

[1,2] **Valery P. Kalinichenko,** [3] Valery P. Meshalkin, [2] Mikhail G. Baryshev, [2] Dmitry V. Demin, [2,4] Sergey V. Gudkov, [5] Wei Liu, [6,7] Alexander V. Swidsinski, [8] Michael R. Overcash, [9] Tatiana M. Minkina, [9] Vishnu D. Rajput, [9] Svetlana N. Sushkova, [9] Saglara S. Mandzhieva, [10] Dmitry A. Makarenkov, [11] Lyudmila P. Ilyina, [1]Vladimir V. Chernenko, and [1]Georgiy S. Larin, [2] Lenar R. Valiullin, [12] Alla A Okolelova

[1] Institute of Fertility of Soils of South Russia, Persianovka, Russia,
[2] All-Russian Phytopathology Research Institute, Big Vyazyomy, Russia,
[3] D. Mendeleev University of Chemical Technology of Russia, Moscow, Russia,
[4] Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia,
[5] Qilu University of Technology (Shandong Academy of Sciences), Shandong Analysis and Test Center, Jinan, Shandong, China,
[6] Charite, University Medicine, Berlin, Germany,
[7] M Sechenov First Moscow State Medical University, Moscow, Russia
[8] Environmental Genome Initiative, North Carolina, USA.
[9] Southern Federal University, Rostov-on-Don, Russia,
[10] Institute of Chemical Reagents and High Purity Chemical Substances of National Research Centre "Kurchatov Institute", Moscow, Russia,
[11] Southern Scientific Center of Russian Academy of Sciences, Rostov-on-Don, Russia,
[12] Volgograd State Technical University, Volgograd, Russia,

## Chemical-Soil-Biological Engineering and Biogeosystem Technique Methodology in Ecosphere Sustainability

Current outdated technological platform of a chemical, environmental and agricultural management causes an "Ecosphere – technology" conflict. A core of this platform is the natural phenomena simplified imitating in technology. Generally accepted technologies lead to ecosphere loading adverse consequences. Poor soil geophysical system and fertility under the uncontrolled soil management, irrigation and chemical waste deposition reduce the soil productivity, and influence badly the ecosphere health and sustainability amplifying a climate change.



ISBN: 978-1-917892-18-6

# 3rd Global Summit on Climate Changes and Sustainability

## September 10-11, 2025 | Barcelona, Spain

An essence of an environmentally sound technological development niche has been revealed on a qualified heuristic approach basis. As a result, a chemical-soil-biological engineering (CSBE) and Biogeosystem Technique (BGT*) methodology was developed.

CSBE-BGT* objects and capabilities are: a main product chemical-technological system; a soil illuvial layer structure and architecture synthesis; a pulsed intra-soil sequential-discrete devices for soil moistening, the liquid by-product and/or soil recycling and plant nutrition; a waste-free bulk or granular by-product soil-biological recycling within the soil inner layer synthesized fine-aggregate architecture; plant favorable development; and an environmentally friendly biological production.

A one-time 20–50 cm layer intra-soil milling provides a long-term stable soil fine multilevel aggregate system improving a soil biome function for up to 40 years. An intra-soil pulse sequential-discrete watering reduces a plant water consumption circa 5–20 times compared to generally accepted irrigation. Municipal, industrial waste and gasification byproduct intra-soil dispersed recycling in a course of a 20–50 cm soil layer milling provides the soil solution equilibria control, heavy metals passivation, environmental safety and plant nutrition. The yield becomes higher for 50–80% compared to generally accepted technology. CSBE-BGT* methodology promotes the soil system continuity, reinforces soil biogeochemical turnover, ensures soil high quality, provides balanced soil moistening and water saving, procures reversible carbon intra-soil and aboveground biological sequestration, waste free, environment friendly circular green chemistry, biosphere health and climate system sustainability.

**Biography**

Professor Dr Sc (Biol) Valery P. Kalinitchenko. Candidate of Science Degree from Moscow State University, in 1984. Doctoral of Science Degree from Moscow State University, in 1991. Don State Agrarian University, Agriculture and Land Reclamation Department Chair, Persianovka, Russia, in 1976-2012. Institute of Fertility of Soils of South Russia Persianovka, director, from 2003 till now (Founder), and All-Russian Phytopathology Research Institute, Big Vyazemy, Russia, leading researcher from 2016 till now. Research interests: 45 years of experience in soil and water sustainable use and resource conservation including soil fertility, water saving, waste recycling, biosphere sustainability, technology in soil high productivity and health, and soil chemical equilibria. Developed Biogeosystem Technique and Chemical-Soil-Biological Engineering. Received the Vernadsky Fund Award (2008). Author: 700 monographs, journal and conference papers and 50 patents, supervised 17 doctoral theses. Member of leading scientific societies including the European Geosciences Union, Eurasian Soil Society and the American Chemical Society. Serves on international journal boards. Editor-in-Chief: Biogeosystem Technique



ISBN: 978-1-917892-18-6