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**MEMORANDUM OF UNDERSTANDING AND COOPERATION  
AGREEMENT FOR A JOINT VIETNAM–RUSSIA RESEARCH PROJECT  
ON COMPARATIVE SOIL CLAY MINERALOGY AND ORGANIC  
MATTER STABILITY IN COASTAL WETLANDS OF NORTHERN  
VIETNAM AND NORTHERN RUSSIA  
BETWEEN  
THE CENTRAL INSTITUTE FOR NATURAL RESOURCES AND  
ENVIRONMENTAL STUDIES (CRES), VIETNAM NATIONAL  
UNIVERSITY, HANOI, VIETNAM  
AND  
M.V. LOMONOSOV MOSCOW STATE UNIVERSITY (MSU), RUSSIAN  
FEDERATION**

The Central Institute for Natural Resources and Environmental Studies (CRES), Vietnam National University, Hanoi, Viet Nam, hereinafter referred to as “CRES”, and Federal State Budgetary Educational Institution of Higher Education “M.V.Lomonosov Moscow State University” (MSU), Russian Federation, hereinafter referred to as “MSU”, collectively referred to as the “Parties” and individually as a “Party”,

Recognizing the importance of international scientific cooperation in understanding coastal wetland ecosystems, soil mineralogy, soil organic matter stabilization, and carbon cycling;

Acknowledging the complementary scientific expertise and research facilities of the Parties;

Intending to develop a joint research project for submission to the National Foundation for Science and Technology Development of Viet Nam

(NAFOSTED) and the Russian Science Foundation (RSF), subject to the applicable requirements of the respective funding agencies;

Have agreed as follows:

## **ARTICLE 1. PURPOSE AND RESEARCH OBJECTIVES**

### **1.1. Purpose**

This Agreement establishes a framework for scientific cooperation between CRES and MSU in a comparative study of soil clay mineralogy and organic matter stability in coastal wetlands of Northern Vietnam and Northern Russia.

### **1.2. Proposed research title**

*Comparative soil clay mineralogy and organic matter stability in coastal wetlands of Northern Vietnam and Northern Russia.*

### **1.3. General objective**

The project aims to investigate how soil clay mineral composition, soil properties, coastal environmental conditions, and hydrological regimes influence the stabilization of soil organic matter in coastal wetlands in Northern Vietnam and Northern Russia.

### **1.4. Specific objectives**

The Parties intend to:

- a) Characterize the clay mineral composition and physicochemical properties of selected coastal wetland soils in both countries;
- b) Assess soil organic matter content, composition, and indicators of stability;
- c) Investigate mineral–organic matter interactions and their relationships with soil properties and environmental conditions;
- d) Compare similarities and differences in soil organic matter stabilization mechanisms between the selected study sites;
- e) Improve scientific understanding of soil carbon storage and biogeochemical processes in contrasting coastal wetland environments.

The final research objectives, hypotheses, methodology, and expected outputs shall be jointly developed and specified in the research proposal.

## **ARTICLE 2. GEOGRAPHICAL SCOPE AND STUDY SITES**

### **2.1. Vietnamese study area**

The Vietnamese component of the project shall focus on selected coastal wetlands in Northern Vietnam, with study sites to be identified by CRES according to their scientific relevance, accessibility, and suitability for comparative soil research.

### **2.2. Russian study area**

The Russian component shall focus on selected coastal wetland areas in Northern Russia, with the specific region and study sites to be proposed by MSU and agreed upon by both Parties.

MSU is invited to select the most scientifically appropriate location based on the availability of coastal wetland soils, suitable sampling sites, research facilities, and opportunities for comparative analysis with the Vietnamese study sites.

Potential locations may include suitable coastal wetland areas along the White Sea or other northern Russian coastal regions, subject to scientific justification and feasibility.

### **2.3. Criteria for selecting comparable study sites**

The Parties shall jointly select study sites based on the following criteria:

- a) Coastal wetland characteristics and the influence of marine or brackish water;
- b) Soil types, sediment characteristics, and clay mineral composition;
- c) Hydrological conditions, salinity, and organic matter accumulation;
- d) Availability of suitable sites for soil sampling and environmental characterization;
- e) Feasibility of applying comparable sampling, laboratory, and analytical methods.

The study sites should provide a scientifically meaningful basis for comparison. The project may examine both shared processes and contrasting environmental conditions, including differences in climate, vegetation, hydrology, and sediment properties.

The final locations shall be specified in the approved research proposal.

## **ARTICLE 3. RESEARCH CONTENT AND IMPLEMENTATION PLAN**

### **3.1. Main research activities**

The joint project is expected to include the following activities:

- a) Review of relevant scientific literature and development of a common research framework;
- b) Selection of study sites and development of harmonized soil sampling protocols;
- c) Field surveys, soil sampling, and collection of relevant environmental data in both countries;
- d) Analysis of soil clay mineralogy, physicochemical properties, and soil organic matter characteristics;
- e) Assessment of relationships between clay minerals, soil properties, environmental conditions, and organic matter stability;
- f) Comparative interpretation of results from Vietnam and Russia;
- g) Preparation of joint scientific publications, research reports, and other agreed outputs.

### **3.2. Implementation period**

The project is expected to run for up to thirty-six (36) months, subject to approval by the relevant funding agencies and the terms of the approved grant agreements.

### **3.3. Indicative implementation schedule**

- Year 1: Research design, selection of study sites, harmonization of methodologies, initial field surveys, and soil sampling.
- Year 2: Laboratory analyses, characterization of soil mineralogy and organic matter, and preliminary data interpretation.
- Year 3: Comparative analysis, synthesis of findings, preparation of joint publications, and dissemination of results.

The detailed work plan, milestones, deliverables, and responsibilities shall be included in the joint research proposal.

## **ARTICLE 4. RESPONSIBILITIES OF THE PARTIES**

### **4.1. Responsibilities of CRES**

CRES intends to:

- a) Coordinate the Vietnamese research team and activities undertaken in Vietnam;
- b) Identify appropriate coastal wetland study sites in Northern Vietnam and arrange fieldwork, subject to necessary permissions;
- c) Contribute scientific expertise, research personnel, soil samples, laboratory analyses, and relevant environmental data as agreed;
- d) Participate in developing common sampling protocols and analytical procedures;
- e) Coordinate preparation and submission of the Vietnamese research proposal to NAFOSTED;
- f) Participate in comparative data analysis, interpretation, joint publications, and reporting.

### **4.2. Responsibilities of MSU**

MSU intends to:

- a) Appoint a principal investigator and qualified researchers to participate in the project;
- b) Propose and justify suitable coastal wetland study sites in Northern Russia;
- c) Contribute expertise in soil clay mineralogy, soil science, mineral–organic matter interactions, and related fields;
- d) Provide access to relevant laboratory facilities, analytical equipment, research personnel, and scientific expertise, as agreed;
- e) Participate in fieldwork, laboratory analyses, data interpretation, and comparative research;
- f) Coordinate preparation and submission of the Russian research proposal to RSF;

g) Contribute to joint publications, scientific meetings, and dissemination of results.

#### **4.3. Joint responsibilities**

Both Parties shall:

a) Jointly develop the research proposal, research methodology, and implementation plan;

b) Ensure that methods and data are sufficiently comparable to support valid scientific conclusions;

c) Exchange relevant research information and data in accordance with applicable regulations and agreed arrangements;

d) Monitor project progress and communicate any significant implementation issues;

e) Prepare joint scientific outputs and reports in accordance with the requirements of the relevant funding agencies.

### **ARTICLE 5. RESOURCES AND CONTRIBUTIONS OF THE PARTIES**

#### **5.1. General principles**

Each Party shall identify the financial and non-financial resources it intends to contribute to the project. Contributions may include funding, research personnel, laboratory facilities, analytical equipment, fieldwork, consumables, scientific expertise, and other relevant resources.

#### **5.2. Contributions of CRES**

- Research personnel and responsibilities: Two Associate professors and five PhD researchers from CRES, contributing to research implementation, data analysis, and joint publications.

- Fieldwork and sampling resources: Fieldwork support, local logistics, sampling materials, and personnel for field investigations in Northern Vietnam.

- Laboratory facilities and equipment: Access to CRES soil analysis laboratory, relevant analytical equipment, and research materials.

- Financial resources: Project-related expenses covered by NAFOSTED funding, subject to the approved budget and applicable regulations.

#### **5.3. Contributions of MSU**

- Research personnel and responsibilities: One Full Professor (D.Sc.), three Assistant Professors (Ph.D.), two Researchers (Ph.D.), two technicians (M.S.), one Ph.D. student, and one M.S. student.

- Laboratory facilities and analytical equipment: Miniflex 600 X-ray diffractometer (Rigaku, Japan); TGA/DSC 3+ (Mettler Toledo, Switzerland); PlasmaQuant MS Elite inductively coupled plasma mass spectrometer (Analytik Jena, Germany); TOC analyzers; CHN analyzers; Bruker AVANCE-II 400WB NMR spectrometer.

- Laboratory analyses and technical services: analytical laboratory of the Department of Soil Chemistry

- Fieldwork, travel, or research exchange support: infrastructure of the White Sea Biological Station of MSU
- Direct financial contribution, if any: grant of the Russian Science Foundation in the case of a successful proposal
- Other in-kind contributions: management and logistics support from the Faculty of Soil Science
- Estimated total contribution, where applicable: Project-related expenses covered by RSF funding, subject to the approved budget and applicable regulations

#### **5.4. Documentation**

The Parties shall ensure that the proposed contributions are realistic and consistent with the research activities. Where required, their nature and estimated value shall be documented in the research proposal, institutional commitments, or supporting documents submitted to the funding agencies.

### **ARTICLE 6. FINANCIAL ARRANGEMENTS AND FUNDING COMMITMENT**

6.1. The Parties intend to seek financial support under the NAFOSTED–RSF cooperation program, subject to the applicable eligibility requirements, assessment procedures, and funding decisions.

6.2. Each Party shall be responsible for preparing and submitting its respective national application and complying with the requirements of its relevant funding agency.

#### **6.3. Financial support from MSU and NAFOSTED**

MSU shall indicate the anticipated financial support it can provide to the project, if applicable:

- Amount: 21,000,000 rubles
- Source of funding: RSF grant
- Intended use: the funds should be used only for the purposes allowed by the laws of the Russian Federation and the rules of RSF, in the framework of the Working Plan and Estimate of the project proposal
- Conditions or approvals: Only in the case of approval of the project proposal by the RSF

If no direct financial contribution is committed at the time of signing, MSU shall specify the non-financial resources it intends to contribute. Any subsequent financial commitment shall be documented separately where required.

NAFOSTED Vietnam shall indicate the anticipated financial support it can provide to the project, as applicable:

- **Maximum amount:** VND 2,400,000,000 (two billion four hundred million Vietnamese dong).

- **Source of funding:** NAFOSTED Vietnam's own funds and/or other lawful sources of funding, as applicable.

- **Intended use:** The funds shall be used exclusively for purposes permitted under applicable Vietnamese laws and regulations, in accordance with the approved Work Plan and Budget of the project proposal.

- **Conditions or approvals:** The financial support shall be subject to the relevant internal approvals of NAFOSTED Vietnam and any other applicable conditions or requirements.

6.4. The Parties acknowledge that any Vietnamese public funding limits linked to the foreign partner's contribution must be observed where applicable. Both Parties shall provide accurate information and supporting evidence of their respective contributions in accordance with the requirements of NAFOSTED and RSF.

6.5. Any financial commitment requiring institutional approval shall be subject to the applicable approval procedures and availability of funding.

6.6. This Agreement does not guarantee that funding will be awarded. Any specific financial obligations shall be governed by the approved grant arrangements or a separate written agreement signed by duly authorized representatives of the Parties.

## **ARTICLE 7. SHARING OF RESEARCH RESULTS AND PUBLICATIONS**

7.1. The Parties shall share relevant data, research findings, and project outputs for joint analysis, verification, and scientific publication.

7.2. Research data shall be exchanged in mutually agreed formats and within agreed timeframes, subject to applicable laws, institutional regulations, confidentiality requirements, and funding-agency rules.

7.3. Publications arising from the project shall appropriately acknowledge the contributions of both Parties and comply with accepted standards of authorship and publication ethics.

7.4. Authorship, author order, acknowledgments, and publication arrangements shall be discussed and agreed upon by the relevant researchers before each manuscript is submitted.

7.5. Neither Party shall disclose confidential information or use unpublished data supplied by the other Party for purposes outside the project without prior written consent, except where disclosure is required by applicable law or funding requirements.

## **ARTICLE 8. INTELLECTUAL PROPERTY**

8.1. Intellectual property arising from the project shall be managed in accordance with applicable laws, institutional regulations, and any separate written agreement between the Parties.

8.2. The Parties shall consult each other regarding the ownership, protection, use, and dissemination of research results that may be subject to intellectual property protection.

8.3. Any specific arrangements concerning intellectual property ownership, licensing, or commercialization shall be agreed upon separately in writing where necessary.

## **ARTICLE 9. COORDINATION AND COMMUNICATION**

### **9.1. CRES contact person**

- Name: PhD. Do Quy Manh
- Position: Research Division for Mangrove forests and Wetlands
- Email: doquymanh@gmail.com

### **9.2. MSU contact person**

- Name: D.Sc. Pavel Krasilnikov
- Position: Acting Dean of the Faculty
- Email: krasilnikov@soil.msu.ru

9.3. The designated contact persons shall coordinate research activities, facilitate communication and information exchange between the Parties, and promptly inform each other of any significant changes that may affect the implementation of the agreed Work Plan.

Each Party shall notify the other Party in writing of any change to its designated contact person and provide the updated contact details. Such a change shall not require an amendment to this MoU.

## **ARTICLE 10. DURATION, AMENDMENT, AND TERMINATION**

10.1. This Agreement shall take effect on the date of the last signature by the authorized representatives of both Parties and shall remain valid for five (5) years, unless otherwise agreed in writing.

10.2. This Agreement may be amended by mutual written consent of the Parties.

10.3. Either Party may terminate this Agreement by providing three (3) months' prior written notice to the other Party.

10.4. Termination shall not automatically cancel obligations under any separately executed grant agreement or other binding agreement already entered into by the Parties.

## **ARTICLE 11. FINAL PROVISIONS**

11.1. This Agreement establishes the framework for the proposed joint research project and records the Parties' intended research activities, implementation arrangements, contributions, and principles for sharing research results.

11.2. Except for specific obligations expressly established in a separate written agreement signed by duly authorized representatives, this Agreement does not itself create a legally binding obligation for either Party to provide funding.

11.3. Any matters not addressed in this Agreement shall be resolved through consultation and mutual written agreement, in accordance with applicable laws and institutional regulations.

11.4. This Agreement is executed in English in two original copies, with each Party retaining one copy.



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Luu The Anh  
Director General,  
Central Institute for Natural Resources and  
Environmental Studies, Vietnam National  
University (Vietnam)

Date:

26/10/2026



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Andrey Fedyanin  
Vice-Rector  
M.V. Lomonosov Moscow State University  
(Russian Federation)

Date:

26/10/2026