Final Evaluation Report

Nr. 720055/19.12.2025

PROJECT REGISTRATION CODE
ANC-EPOC-2025-0056

RESEARCH ORGANIZATION NAME
INSTITUTUL NATIONAL DE CERCETARE-DEZVOLTARE PENTRU OPTOELECTRONICA INOE 2000 INCD

RESEARCH ORGANIZATION TYPE
B. Research Organizations - applied research/technological development/innovation (except HE)

PERIOD UNDER EVALUATION
2020-2024

DATE OF VISIT

13 and 14 of November, 2025

Criterion I. DEVELOPMENT AND INNOVATION ACTIVITY
[max. score: 50]

Indicator I.1 The capacity to attract and manage research funding
[max. score: 17]

Score obtained: 16.33

- Analyse the extent to which the research organization demonstrates its capacity to attract funds from competitively won grants/contracts obtained from national or international organizations/institutions and also to manage the available financial resources.
- The performance indicators associated with indicator I.1 are:
  – Contracts obtained/grants won by the research organization from European/international funds (number);
  – Value of contracts obtained/grants won by the research organization from international organizations/institutions (amounts);
  – Contracts obtained/grants won by the research organization from national organizations/institutions (number);
  – Value of contracts obtained/grants won by the research organization from national organizations/institutions (amounts);
  – The structure of the budget according to the specificity of the research organization over the last 5 years.
- Evaluate mainly the organization's ability to win competitively grants/contracts from national and international organizations/institutions.

COMMENT - STRENGTHS

The research organisation has the capacity to attract financial resources through competitive national and international calls. The funding portfolio is diversified, combining national grants, European projects, international institutional contracts, and private-sector services, ensuring financial stability. The number of international contracts and grants awarded in the frame of highly competitive calls, the European Commission's H2020/Horizon Europe programmes, the European Union's Space programme, European Space Agency competitions, and the European Research Infrastructure Consortium ACTRIS ERIC service agreements is high, between 16 and 19 research contracts per year. The total value of the contracts is significant, representing around 9 % of the total budget of the institution. The number of the projects awarded in the frame of national calls, TE, PED, PCCDI, PCE, and PFE, is also high, on average 50 projects per year, demonstrating strong national competitiveness and a very good project management capacity. The value of national projects and contracts, including the Core Program and competitive projects is around 75 % of the total budget. Incomes are obtained also from services, commercial contracts, and licenses.

COMMENT - WEAKNESSES

The Institute participates in international projects mainly as partner, the number of coordinated projects is relatively low. A significant part of the total funding comes from large national institutional programs, generating potential vulnerability if the available financial resources for these programs diminish, the Core Program representing around 50 % of the total budget of the institution. Collaboration with private entities, especially internationally, remains limited in number and financial size.

Indicator I.2 Organized scientific events

[max. score: 3]

Score obtained: 1.33

- Analyse the extent to which the research organization, in order to disseminate the results of scientific research, has organized, both as coordinator and in partnership with other research organizations, international and/or national scientific events (congresses, conferences, symposia, workshops) or summer schools.
- The performance indicators associated with indicator I.2 are:
  – Organized international scientific events (congresses, conferences, symposia, workshops) or summer schools;
  – Organized national scientific events (congresses, conferences, symposia, workshops) or summer schools.
- Evaluate mainly the organization of international scientific events.
- Note: In the case of international scientific events, a minimum of 20% of participants from abroad is taken into consideration.

COMMENT - STRENGTHS

The research institution organized and co-organized numerous national and international scientific events, covering fields such as atmospheric and heritage sciences, and advanced technologies. A highlight is LACONA XIV (Lasers in the Conservation of Artworks), a major international conference with nearly 30 years of tradition and recognized as the most prestigious event in the field. The research organization was selected by the international scientific committee to host and organize the 2024 edition of the event in Bucharest. The institute plays a key organizing role in several established European Research Infrastructure events, as ACTRIS ERIC, E-RIHS, which consistently attract foreign participants. The organized events demonstrate strong international visibility and leadership in the scientific communities.

COMMENT - WEAKNESSES

The International Conference on Optoelectronics and Heritage Science organized by the research institution had limited participation, but with a strong prospective to evolve in the next period. Some of the events included in the self-assessment report as international conferences, are exhibitions or training events, as e.g. AGRIFA and AGROPODIOM 2024. Additionally, for some of the international conferences the website in not available, or the indicated website does not contain sufficiently detailed information about the participants and the program of the conferences, as e.g. the IMTECH Conference.

Indicator I.3 The capacity to develop services, technologies, products

[max. score: 25]

Score obtained: 21.17

- Analyse, relative to the available funding and number of researchers, the extent to which the research organization has societal, economic and social impact demonstrated by the capacity to develop services, technologies, products, reflected, according to the research organization's mission, in products/technologies/ developed/posted methodologies /reports/publications/public interest studies/research services/consultancy/impact studies.
- The performance indicators associated with indicator I.3 are:
  – Products/technologies/processes/methodologies developed through research activities resulting from economic or scientific research contracts;
  – Technologies and services made available to other research centers on a contract/collaboration project basis (including posted in EERTIS - https://eertis.eu/) or Open access;
  – Reports/studies of public interest or with private beneficiaries.
- Evaluate mainly, relative to the scientific research organization's mission, the extent to which the scientific research organization demonstrates the capacity to develop services, technologies, products for public or private beneficiaries through: reports/studies/research services/consulting/software systems for editing, publishing and online consultation of scientific information/theoretical studies with social impact or in other sciences, obtained through competition, commissioned or carried out at the request of beneficiaries, or with social impact or in other sciences proven by official documents/contractual relations/requests/orders.

COMMENT - STRENGTHS

The research organization and principally its subsidiaries have the capacity to develop services and technologies, with relevant impact on the economy and society, as e.g. systems and prototypes with applications in industry, agriculture, cultural heritage conservation, air quality, and environmental monitoring. Intellectual property rights of the developed systems and prototypes were protected by patent applications. Part of these systems and prototypes were developed in collaboration with industrial beneficiaries in the frame of economic or research contracts. The Institute demonstrates a robust capacity to generate methodologies, services, and scientific resources aligned with its mission, through the European Research Infrastructures ACTRIS and E-RIHS, the ACTRIS–EARLINET European aerosol database, and the INFRA-ART FAIR spectral library, as well as high-impact reports and public-interest studies, including the UNESCO heritage list 2024, demonstrating international relevance. The Institute shows also a strong potential to provide research services to public and private beneficiaries, including RENAR-accredited environmental testing and high-level diagnostics.

COMMENT - WEAKNESSES

Commercialization of the developed technologies and products is not sufficiently documented. The impact is concentrated mostly in public-sector services, research infrastructure contributions, and scientific methodologies, rather than industrial exploitation. Part of the services and products are not sufficiently quantified in terms of revenues or number of beneficiaries. The reported studies, approximately equal in number with the technological results, are not referring directly to products, technologies, methodologies, processes, and services, they are in most cases documents, comprising results which were subsequently published by the researchers of the organization in scientific articles.

Indicator I.4 Editing and publishing the research organization's own journals or with the involvement of the organization's researchers [max. score: 1]	**Score obtained: 0.50**

- Analyse the extent to which the research organization demonstrates the capacity to contribute to the process of disseminating the results of quality scientific research by editing and publishing its own journals indexed in Web of Science or other recognized international databases, and the extent to which researchers in the organization are involved in editing and publishing journals indexed in recognized international databases (Web of Science, etc.).
- The performance indicators associated with indicator I.4 are:
  – The research organization is editing and publishing its own journal indexed in Web of Science (Journal Citation Reports Q1/Q2/Q3/Q4, Emerging Sources Citation Index or, in addition, Arts & Humanities Citation Index, for humanities), SCOPUS;

– The research organization is editing and publishing its own journal indexed in CNCS (A or B) or in another recognized IDB;
– Persons affiliated with the evaluated research organization fulfilling the role of editor-in-chief of a journal indexed in Web of Science (Journal Citation Reports Q1/Q2/Q3/Q4, Emerging Sources Citation Index or, in addition, Arts & Humanities Citation Index, for humanities), SCOPUS;
– Persons affiliated with the evaluated research organization fulfilling the role of editor-in-chief of a CNCS (A or B) indexed journal, for humanities.

- Evaluate mainly, relative to the available resources, the extent to which the research organization demonstrates the capacity to edit and publish its own journal indexed in recognized international databases, and also a high degree of involvement from the researchers in the organization in editing and publishing journals indexed in recognized international databases.
- Note: In the case of journals indexed by Journal Citation Reports, will be taken into consideration the impact factors (IF) or the influence scores (AIS) calculated by Web of Science. The best Q1, Q2, Q3 or Q4 ranking (between IF and AIS) of the last 5 editions published by Journal Citation Reports relative to the year of evaluation will be considered.

COMMENT - STRENGTHS

The researchers of the institution participated in editing and publishing scientific journals, with 98 editorial roles documented during 2020–2024.

COMMENT - WEAKNESSES

Researchers from the evaluated institution participated in the editing and publication of two journals indexed in Web of Science. However, the impact factor of the journals is relatively modest, Q4 category, with limited improvement as compared to the previous evaluation period. The editorial activity of the researchers is concentrated mainly on guest-editing special issues, reflecting scientific involvement, but with lower institutional impact as compared to permanent editorial board roles. The institutional affiliation of the Associate Editor-in-Chief of Journal Geography and Sustainability (Q1), is different from the institution under evaluation, indicated in the self-evaluation report.

Indicator I.5 The capacity to train young researchers (PhD, postdoc)

[max. score: 4]

Score obtained: 3.00

- Analyse the extent to which the research organization contributes to the training of young researchers (doctoral and postdoctoral studies) in relation to preparing doctoral theses and postdoctoral fellowships in sectors/departments of the research organization, participations of researchers from the research organization as members of doctoral thesis public defence committees or doctoral thesis guidance committees, researchers working in the research organization with the quality of doctoral supervisor or POSDRU/POCU/MSCA/PNCDI/PNRR projects of postdoctoral and doctoral research won/implemented by the research organization.
- The performance indicators associated with indicator I.5 are:
– Doctoral theses prepared or postdoctoral fellowships carried out in sectors/departments of the research organization;
– Researchers affiliated with the research organization, who have participated as members in a doctoral thesis public defence committee or a doctoral thesis guidance committee;
– Doctoral supervisors working in the research organization;
– POSDRU/POCU/MSCA/ PNCDI/PNRR postdoctoral and doctoral research projects won/implemented by the research organization;
– PhD students/postdoctoral researchers within the research organization.
- Evaluate mainly whether the research organization demonstrates that it has contributed to the training of young researchers (doctoral and postdoctoral studies) by having researchers from the evaluated research organization fulfilling the role of doctoral supervisors, the capacity to attract doctoral/postdoctoral researchers in the research organization, the capacity to prepare doctoral theses in sectors/departments of the evaluated research organization, participations of researchers from the research organization as members in doctoral thesis public defence committees and doctoral thesis guidance committees or through POSDRU/POCU/MSCA/PNCDI/PNRR postdoctoral and doctoral research projects won/implemented by the research organization.

COMMENT - STRENGTHS

The Institute contributed to the training of your researchers during the evaluated period, through mentoring of a significant number of doctoral students, with 18 finalized and 9 ongoing PhD theses. A total of 41 PhD students performed research stages in the institution during the evaluated period. The researchers of the Institute supervised experiments and offered support in data analysis as well as in scientific dissemination activities. The doctoral theses were carried out in collaboration with higher education institutions, University of Bucharest, Politehnica Bucharest, Babeş-Bolyai University, Technical University of Cluj-Napoca, and University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca. The researchers also participated in the guidance and advice of postdoctoral students in the research topics of the institution. A total of 15 POSDRU/POCU/MSCA/PNCDI/PNRR projects were gained by INOE 2000 over the evaluated period. The Institute's research infrastructure was made available for the doctoral and postdoctoral students. The researchers affiliated to the research organization participated also as members in doctoral thesis defense committees and in doctoral thesis guidance committees, 25 and 15 doctoral theses, respectively, both at national and international universities, including the University of Queensland – Australia and the University of Eastern Finland.

COMMENT - WEAKNESSES

The number of researchers associated to the doctoral schools of higher education institutions, as doctoral supervisors, is relatively low as compared to the total number of senior researchers with CS I degree in the research organization. Intention of the senior researchers for habilitation, required for association doctoral schools of higher education institution, is not sufficiently evidenced. There are also certain differences between the number of doctoral supervisors at the research institution mentioned in the self-assessment report, Annex 7.5, and the reporting UEFISCDI platform.

Criterion II. RESULTS OF RESEARCH ACTIVITY AND IMPACT AT INTERNATIONAL AND NATIONAL LEVEL

[max. score: 50]

Indicator II.1 Works of wide scope and fundamental importance; books, treatises, encyclopaedias, monographs, coordinated/published/edited studies and chapters; published articles; patents applied/exploited/obtained [max. score: 35]	**Score obtained: 25.00**

- Analyse the productivity of the research organization, relative to the available resources (including human resources expressed as number of researchers - full-time equivalent), respectively to the funding received by the research organization, from the perspective of the scientific output materialized, according to the specific mission of the research organization in: articles published in indexed journals (Journal Citation Reports Q1, Q2, Q3, Q4, Emerging Sources Citation Index or, in addition, Arts & Humanities Citation Index, for humanities), SCOPUS, IEEE or CNCS (A or B) indexed, for humanities, treatises/books/monographs published by researchers in the research organization as authors or editors with established international and national publishing houses, chapters in these categories of publications, patents applied/exploited/obtained.
- The performance indicators associated with indicator II.1 are:
  – Articles published in a Web of Science indexed journal (Journal Citation Reports Q1, Q2, Q3, Q4, Emerging Sources Citation Index or, in addition, Arts & Humanities Citation Index, for humanities), SCOPUS, IEEE;
  – Articles published in a journal indexed in CNSC (A or B), for humanities;
  – Treatises/books/monographs or chapters published by an established publishing house from abroad, as an author;
  – Treatises/books/monographs published by an established publishing house from abroad, as an editor/coordinator;
  – Treatises/books/monographs or chapters published by a CNCS A or B ranked publishing house or by an established publishing house in the country, as an author;

– Treatises/books/monographs published by a CNCS A or B rated publishing house or by an established publishing house in the country, as an editor/co-coordinator;
– Registered and published patent applications;
– Patents applied/exploited at national or international level or exploited at international level (with EU/OECD priority);
– Variety/breed certificates applied/exploited at national or international level or exploited at international level (with EU/OECD priority);
– Patents obtained at international (with EU/OECD priority) or national level;
– Intellectual property, ORDA certificates.

- Evaluate mainly a high level of productivity of the research organization in terms of scientific output, materialized, according to the specific mission of the research organization, in articles published in Web of Science indexed journals (Journal Citation Reports Q1, Q2, Q3, Q4, Emerging Sources Citation Index or, in addition, for humanities, Arts & Humanities Citation Index), SCOPUS, IEEE or, in addition, for the humanities, articles published in a CNSC (A or B) indexed journal, treatises/books/monographs published by researchers in the research organization as authors or editors in established international and national publishing houses, chapters in these categories of publications.
- Evaluate mainly patents applied/exploited in the "National Register of Invention Patents", within OSIM, Romania, international patents registered with the European Patent Office (EPO) or the World Intellectual Property Organization (WIPO) or other international patent databases.
- Note: In the case of journals indexed by Journal Citation Reports, impact factors (IF) or influence scores (AIS) calculated by Web of Science will be taken into account. The best ranking Q1, Q2, Q3 or Q4 (between IF and AIS) of the last 5 editions published by Journal Citation Reports relative to the year of the evaluation will be considered.
- In the case of articles, only those for which the author has indicated the affiliation to the evaluated research organization will be considered.

COMMENT - STRENGTHS

The Institute has a good overall publication productivity, with an average of 113 WoS/Scopus-indexed articles per year during the 2020–2024 period, corresponding to 1.45 articles per FTE researcher. The obtained results were published in journals from the Q1 and Q2 quartiles, 36 % of the total publications belonging to Q1 and 35 % to Q2 journals, indicating a good scientific visibility. The innovation activity of the institution is reflected by the large number of patent applications and granted patents during the evaluated period, as well as two registered trademarks and one utility model. 74 patent applications were submitted in the evaluated period and 53 were granted. 6 patents were exploited through services, provided to third parties.

COMMENT - WEAKNESSES

The Institute has a relatively low number of papers published in top-tier high-impact journals. Moreover, a relatively high number of articles are published in exclusively open access journals. Exclusively open access can imply potential biases in editorial decisions, as a function of internal financial strategy of the editorials. The number of edited books and book chapters is very limited, only 18 book chapters during the five years' evaluation period. The number of international patent applications is relatively reduced, as compared to the total number of patent applications, only 3 international patent applications and no granted international patents, which severely limits international technological impact.

Indicator II.2 Papers and communications presented at scientific events [max. score: 5]	**Score obtained: 3.50**

- Analyse, relative to the specificity of the organization, the extent to which the research organization's scientists disseminate the results of their own research at prestigious scientific events.
- The performance indicators associated with indicator II.2 are:
  – Papers presented at an international scientific event, published in a volume indexed in Web of Science - Conference Proceedings Citation Index (CPCI-S), Conference Proceedings Citation Index - Social Science & Humanities (CPCI-SSH), classified IEEE proceedings;
  – Papers presented at an international scientific event, published in an edited volume with ISBN (non - WoS);
  – Invited/keynote papers presented at an international scientific event;

– Invited /keynote papers presented at a national scientific event.

- Evaluate mainly, relative to the specificity of the field, the high degree of dissemination of the organization's scientific research results through the participation of researchers in prestigious international scientific events and the publication of their presentations in Web of Science (WOS) or ISBN (non-WOS) indexed conference proceedings, and invitations as keynote speakers at national and international scientific events.
- Note: In the case of papers presented at scientific events, will be taken into consideration only those for which the author has indicated the affiliation with the research organization.

COMMENT - STRENGTHS

The researchers participated with oral and poster presentations at national and international scientific events, such as conferences, seminars, and workshops, with a total of 228 contributions during the evaluated period. Normalized to staff size, this corresponds to ~2.9 presentations per FTE researcher over the period (≈0.6 presentations per FTE per year), which reflects steady dissemination activity. Part of the papers presented at the events were published in volumes of journals indexed in Web of Science, and conference proceedings with ISBN, ensuring visibility at recognized conference venues.

COMMENT - WEAKNESSES

Substantial part of dissemination occurred through lower-visibility events. The number of invited/keynote presentations at national and international conferences is relatively low during the evaluated period.

Indicator II.3 Visibility and impact of the published work [max. score: 10]	**Score obtained: 7.50**

- Analyse the scientific visibility and impact of the research organization's publications through the number of citations in WOS, SCOPUS, IEEE indexed journals or, in addition, for the humanities, Arts & Humanities Citation Index, in CNCS (A or B) indexed journals and books (excluding self-citation).
- The performance indicators associated with indicator II.3 are:
  – Number of citations accumulated by the research organization during the evaluated period in the following databases:
    - Web of Science;
    - SCOPUS; IEEE;
    - in addition, for the humanities Arts & Humanities Citation Index, in CNCS (A or B) indexed journals and books.
- Evaluate mainly the identification of a significant number of citations, in the evaluated period, of papers published by the research organization in journals indexed in WOS, SCOPUS, IEEE or, in addition, for humanities, Arts & Humanities Citation Index, in journals indexed CNCS (A or B) and books, regardless of the year of publication of the cited work.
- Note: In the case of citations, only those for works published by the author affiliated with the evaluated research organization will be taken into consideration.

COMMENT - STRENGTHS

The visibility and impact of the articles published in the evaluated period is reflected by a relatively high number of citations. The publications accumulated 28.187 WoS citations, excluding self-citations. The number of citations increased gradually during the evaluated period, from 3,238 in the year 2020 to 4,575 in 2024, and citations normalized to FTE researchers remain solid across the evaluated period.

COMMENT - WEAKNESSES

Some of the highly cited articles are published in collaboration with other institutions. The participation from the evaluated institution is limited in some cases to a relatively low number of researchers, reducing the direct institutional impact. Significant part of the total citations is generated by a small number of highly cited papers. Moreover, citation impact is uneven across fields, strong in materials science and environmental/atmospheric research, but lower in optoelectronics or applied photonics.

Criterion III. MANAGEMENT AND INSTITUTIONAL CAPACITY
[max. score: 40]

Indicator III.1 Quality management system (certified by authorised institutions)
[max. score: 3]

Score obtained: 3.00

- Analyse whether the organization has a developed, approved and implemented an internal quality management regulation or procedure, a quality manual and other specific procedures, as well as whether the research organization has been accredited by institutions authorised in the field of quality management.
- Evaluate mainly whether the organization has a quality management regulation or procedure in place, a quality manual, a procedure for managing risks and opportunities and, in general, the existence of quality procedures for the activities carried out.
- The maximum score is awarded when the research organization provides proof of ISO 9001 accreditation from an authorised institution.

COMMENT - STRENGTHS

A certified ISO 9001 quality management system was implemented by the research organization, recertified in January 2024 according to SR EN ISO 9001:2015, awarded by the AJA Europe Ltd. - Multinational Certification Body in Quality Management Systems and Training. The corresponding documentation includes a Quality Manual, as well as general and specific operational procedures, 2 general procedures, 5 system procedures, 10 specific procedures, and 53 operational procedures, demonstrating a fully developed internal quality framework. Additionally, a certified quality and environmental management system was implemented by one of the subsidiaries of the organization, according to the quality standards SR EN ISO 9001:2015 and SR EN ISO 14001:2015 (Q-9361/24 and E-9361/24, 09.08.2024), covering research, technology transfer, and laboratory testing activities.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator III.2 Regulations, rules, procedures implemented by the research organization
[max. score: 2]

Score obtained: 2.00

- Analyse whether the research organization has updated organizational and operational regulations and an internal regulation according to the legal provisions in force, regulations/procedures developed, approved and implemented for research activity management, employee performance evaluation, integrity, equal opportunities, etc.
- Evaluate mainly the high degree of implementation of regulations, rules and procedures and the high degree of confidence in the Internal Managerial Control System (SCIM) of the research organization.

COMMENT - STRENGTHS

Regulations, rules, and procedures are properly implemented by the research organization, such as organization and functioning rules, internal rules, department-level rules, integrity plan, intellectual property policy, gender equality plan, as well as regulations, in accordance with the characteristics of the performed research activities, regulation of the Scientific Council, regulation on the organization of the promotion examination and rules for the organization of competitions for filling vacant positions. The Institute has implemented an extensive Internal Managerial Control System (SCIM) in accordance with OSGG 600/2018, with 35 documented procedures, annual self-assessment reports, monitoring documents, risk register, and regular performance reviews. Risks management system is adequate. The risks that may affect the achievement of the organisation's objectives and activities have been identified and included in the risk register. The internal regulations cover key areas required by the criterion, including research activity management, employee performance evaluation, training, procurement, customer satisfaction, handling non-conformities, risk and opportunity management, and audit procedures. Branches, especially ICIA, maintain their own updated sets of quality and environmental procedures, demonstrating coherent implementation across the institution.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator III.3 Ethics and academic integrity in research [max. score: 5]	**Score obtained: 5.00**

- Analyse the existence of a code of ethics, a research ethics committee, a specific procedure for the functioning of the committee and the extent to which the committee proves its functionality in case of complaints.
- Evaluate mainly whether the research organization has a code of ethics, an ethics committee operating procedures developed, approved and implemented, the existence of an ethics and academic integrity committee and documents attesting to the functioning of the ethics committee, in case of complaints.

COMMENT - STRENGTHS

The research organization has an appropriate Code of Ethics and Professional Conduct, developed following the Law no. 183/2024 on Conduct in Scientific Research, regulating conduct, conflicts of interest, good research practice, and prevention of misconduct. Its application is supervised by the Ethics Commission, composed of a chairperson, two vice-chairpersons from the two subsidiaries, and six members representing the institution and its subsidiaries. The role of the Ethics Commission is set out in the "Rules of Organization and Functioning of the INOE Ethics Commission". Specific procedures exist for handling notifications, complaints, conflicts of interest, and suspected integrity breaches, aligned with national legislation (Law 206/2004; Law 319/2003). Documentation includes records of the functioning of the Ethics Commission, meetings, and reports demonstrating that the Committee is operational, activating when complaints arise. Ethics and integrity procedures are integrated with the ISO 9001 quality system and the SCIM internal control framework, ensuring systematic monitoring and traceability.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator III.4 Research infrastructure related to the mission and objectives of the research organization (how the infrastructure sustains the mission of the research organization) [max. score: 10]	**Score obtained: 10.00**

- Analyse the extent to which the infrastructure sustains the research organization's mission and the degree of development of the research-development and innovation infrastructure relative to the activities carried out within the organization.
- Evaluate mainly whether the research infrastructure is appropriate to the research organization's mission, a high degree

of its development, and the existence of an investment strategy and plan.

COMMENT - STRENGTHS

The Institute has an extensive, well-developed research infrastructure that directly supports its mission, covering optoelectronics, photonics, laser systems, advanced spectroscopy and imaging, materials synthesis and characterization, atmospheric remote sensing (including multiple lidar systems), and cultural heritage science, ensuring competitiveness at international level. This includes RENAR-accredited laboratories and specialized national facilities. The infrastructure was upgraded during the evaluated period and new laboratories were also created through PNCDI, POC/POCIDIF projects and institutional funds, demonstrating a clear investment strategy and long-term commitment to maintain high-performance research facilities. The infrastructure is actively used for research, technology development, accredited services, education, and international collaborations, showing strong functional alignment with the scientific and strategic objectives of the institution. The institution has a well-developed investment plan for the next 5 years period, in accordance with strategic development objectives. It will be prioritized investments which support multiple research directions, multi-user infrastructure, as well as modernization and construction of new premises. The procurement of a state-of-the-art research infrastructure, as well as IT equipment is envisaged.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator III.5 The research organization as a member in scientific networks/associative bodies [max. score: 5]	**Score obtained: 5.00**

- Analyse the capacity of the research organization to integrate into research networks and associative bodies, as evidenced by concluded agreements/protocols and other documents provided by the organization on the functionality of the partnerships, with a focus on joint submission and winning of projects, organization of joint scientific events, development of scientific publications, etc.
- Evaluate mainly whether the research organization has collaboration agreements/protocols in place, as well as whether there is documentary evidence that they are functional (submission and winning of projects in partnership, organization of scientific events in partnership, joint preparation of articles/studies/books, etc.).

COMMENT - STRENGTHS

The institution is member of ESFRI/ERIC infrastructures, ACTRIS (Aerosol, Clouds and Trace Gases Research Infrastructure), E-RIHS (European Research Infrastructure for Heritage Science), METROFOOD-RI (Infrastructure for Promoting Metrology in Food and Nutrition), ICOS (Integrated Carbon Observing System). This is a remarkable result of many years of systematic efforts. At the national level, the Institute is part of ACTRIS-RO (Aerosol, Clouds and Trace Gases Research Infrastructure Romania) and E-RIHS-RO (European Research Infrastructure for Heritage Science Romania), both being the national projection of the European level activities, EURALIM (Research Infrastructure for Food Safety through Food Fraud Detection), MOCA (Laboratory for Optospectral Methods for Water Quality Assessment), DATAFUSIONART (Integrative infrastructure for the fusion of complex, innovative, multidisciplinary digital data with cultural heritage applications), ICOS-RO (Integrated Carbon Observing System Romania) which is the national projection of the European level activities. The membership in scientific and professional associations enhances institutional visibility and long-term cooperation. Moreover, the organization was awarded with three European projects in the frame of competitive calls and collaborates with an elevated number of research institutions, through the European ACTRIS ERIC research infrastructure. In the period under evaluation, the research organization established a high number of collaboration agreements with different, national and foreign institutions, in form of memorandum of understanding, contracts, collaboration agreements and protocols.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator III.6 Accredited or non-accredited testing, trials, analysis laboratories; Open access libraries and databases created/administered, to the extent that funding was available

[max. score: 10]

Score obtained: 10.00

- Analyse the extent to which the research organization is equipped with laboratories for tests, trials, analysis and their accreditation status or the existence of their own libraries, Open access databases and the intensity of access, in correlation with the field in which the research organization is active and the available funds.
- Evaluate mainly whether, relative to the funds available and the field in which it operates, the research organization has laboratories for testing, trials analysis, and whether they are accredited or whether it has its own library or Open access databases and whether there is evidence that the scientific information in the library or Open access databases has been accessed.

COMMENT - STRENGTHS

The institution has two RENAR-accredited laboratories and one laboratory authorized by the Ministry of Culture. The RENAR-accredited laboratories are the Laboratory for Environmental Analysis, for testing water, soil, sediment, air, sludge, vegetation, and food samples and the Laboratory for Characterization and Diagnosis Analysis by Optical and Complementary Methods. The Laboratory for Restoration and Conservation of Cultural Heritage is accredited by the Ministry of Culture, providing services in restoration of cultural heritage. The Institute contributes to major Open Access databases, such as the ACTRIS CARS database, ACTRIS–EARLINET aerosol repository, and the INFRA-ART FAIR spectral library, which are actively used by national and international research communities. The ICIA branch maintains ISO 9001:2015 and ISO 14001:2015 certifications, ensuring structured laboratory and testing processes. The IHP branch has three testing laboratories, focused on industrial needs.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator III.7 Degree of digitalization of the research organization

[max. score: 3]

Score obtained: 3.00

- Analyse whether, relative to the research organization's mission and in correlation with the current standards in the field, the IT infrastructure is adequate for the researchers' work, and the extent to which the research organization has an updated website with the results of the research carried out in the research organization available in an open access regime.
- Evaluate mainly whether the IT infrastructure is appropriate to the research organization's mission, the research organization has a website in Romanian and English and, in correlation with the available funds, the website is updated with research results published in an open access regime.

COMMENT - STRENGTHS

The Institute has a complex, distributed IT infrastructure, data centers, and many software applications, supporting properly research activities, data processing, and communication, including dedicated servers for ACTRIS-CARS, atmospheric data processing, and heritage-science digital resources. Cybersecurity concept is based on BitDefender-licensed antivirus solutions. Access security is ensured by the implementation of an

Identity and Access Management system, supporting modern authentication and Zero-Trust architectures, as well as VPNs enabling secure remote connection. The Institute maintains an updated institutional website (Romanian and English), which provides information on research outputs, projects, laboratories, infrastructure, and open-access scientific resources.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator III.8 Innovation Management System
[max. score: 2]

Score obtained: 1.67

- Analyse whether the organization has an approved and implemented innovation management regulation/procedure and whether it has organized its own technology transfer centre.
- The maximum score is awarded when the research organization provides evidence of accreditation/certification of the innovation management system by an authorised institution and the establishment/operation of a technology transfer centre.

COMMENT - STRENGTHS

The research organization has developed, implemented, and certified an Innovation Management System, in accordance with the requirements of SR 13572:2016. The system includes the Innovation Management Statement, the Innovation Strategy and Action Plan, as well as procedures, as e.g. for performance evaluation, and is re-evaluated annually. The Technology Transfer Center, CENTI, of the institution is accredited as an Innovation and Technology Transfer Entity by the Romanian Ministry of Education and Research and is part of the ReNITT, National Network of Innovation and Technology Transfer infrastructure, with expertise in the fields of bioeconomy, energy, environment and climate change, and health applications. The ICIA branch hosts the CENTO Technology Transfer Center, which is formally recognized and supports technology transfer activities, dissemination, prototyping, and collaboration with industry and public stakeholders.

COMMENT - WEAKNESSES

Activities related to technology transfer to industry, patent exploitations, managed by the technology transfer centres of the research organisation, are relatively limited. Although CENTO exists at ICIA, its institutional integration at the central level is not fully detailed.

Criterion IV. PERFORMANCE AND SOCIO-ECONOMIC IMPACT
[max. score: 25]

Indicator IV.1 The extent to which the activity responds to public interests of national or local importance
[max. score: 5]

Score obtained: 5.00

- Analyse, relative to the research-development field, and the available funding and human resources, the organization's capacity to coordinate or participate in the development of studies, sectoral projects, research projects of local or national impact; research services for or in partnership with commercial entities.
- Evaluate mainly the coordination of or participation in the development of complex works with national and local economic/social impact.

COMMENT - STRENGTHS

The R&D activities and services offered by the institution have relevant national and local economic and social impacts, in the fields of environmental monitoring, air-quality and climate studies, and diagnostic investigations for cultural heritage authorities. The Institute participates in sectoral projects from Ministries and applied projects with companies, providing studies and technical expertise with direct socio-economic relevance. The projects carried out in partnership with economic operators resulted in the transfer to the economic operators of products and processes in various fields, such as mechatronics, digital hydraulics, environmental pollution, green energy solutions through recycling and waste reduction. The Institute contributed with essential scientific documentation for the UNESCO nomination of the "Calea Eroilor" ensemble from Târgu Jiu, demonstrating cultural and societal impact.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator IV.2 The capacity to develop national and international collaborations [max. score: 10]	**Score obtained: 10.00**

- Analyse the capacity of the research organization to develop national and international collaborations that have as main outcomes the joint use of components of the research infrastructure, providing access to researchers from other research organizations to different components of its own infrastructure (including IOSIN); provide support services for other research organizations or researchers from outside the organization, co-opting partner organizations or researchers from other organizations in initiated projects.
- Evaluate mainly the evidence of a high degree of joint use of infrastructure with other research organizations, providing access to components of the research infrastructure for researchers from other research organizations, providing services to other research organizations or researchers from other research organizations, as well as attracting researchers or research organizations in inter- and trans-disciplinary research projects.

COMMENT - STRENGTHS

The Institute is part of numerous consortia and provides joint access to infrastructure through major European research infrastructures, notably ACTRIS-CARS and E-RIHS, hosting visiting researchers for measurements, intercomparison campaigns, and training schools. The institution has an extended collaboration network constituted by academic, research and economic partners, established in the frame of the European Space Agency (ESA), the European Commission through the H2020 and HORIZON EUROPE programs, as well as European Regional Development Fund (ERDF) competitions. The Institute collaborates extensively also with national universities and research institutes, offering access to atmospheric stations, laser systems, materials characterization equipment, and heritage-science facilities. The institution delivers specialized services and participates in interdisciplinary projects with national and international partners, generating co-authored publications and shared data outputs and provides measurements and observational data to open access international databases.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator IV.3 The contribution to national and international experimental development and innovation [max. score: 10]	**Score obtained: 7.33**

- Analyse the works identified by the research organization as being of reference for science in terms of the contributions made by the research organization through these works, and the evidence of recognition of their impact by the national and international scientific community; analyse the results of applied research and patents identified by the research organization as having economic impact.
- Evaluate mainly the publication of reference works in the respective field, e.g. handbooks; books in the most prestigious publishing houses; results highlighted, e.g. on the cover of prestigious journals, organization of activities to disseminate results of scientific work through large-scale events/studies/reports with proven prestige in the national and international scientific community; experimental development works/patents for or in partnership with the economic environment.

COMMENT - STRENGTHS

The Institute has significant contribution to the fields of earth sciences and application of optoelectronic methods for heritage conservation and contributed also with reference methodologies to ACTRIS and E-RIHS (QA/QC procedures, lidar standards, spectral libraries). The heritage-science lab produced nationally significant methodological guides and diagnostic studies, demonstrating societal and cultural impact. INOE 2000 has an active IP portfolio (2020–2024): 73 patent applications, 45 granted patents, and 3 international applications, with several patents valorised in projects or prototypes. The Institute collaborates with industry and public authorities for applied research, prototyping, testing, and technology development (e.g., materials characterization, environmental sensors, conservation technologies).

COMMENT - WEAKNESSES

There are only few major reference works published by high-prestige editorials. The economic impact of the developed solutions is not sufficiently quantified, their market uptake and economic relevance are insufficiently outlined in the self-assessment report.

Criterion V. HUMAN RESOURCES

[max. score: 15]

Indicator V.1 Staff structure by scientific grade and the share of PhD supervisors, and career development opportunities

[max. score: 10]

Score obtained: 7.33

- Analyse the career development opportunities offered by the research organization to its members, the structure of the scientific research staff by scientific grade, the number and share of PhDs, PhD supervisors, the quality of the research team as a whole and the extent to which it is appropriate for the mission and activities carried out by the research organization.
- Evaluate mainly the career development opportunities offered to researchers within the research organization, a balanced structure of total staff and research staff by scientific grade, a high number and share of PhD supervisors.

COMMENT - STRENGTHS

The Institute has a stable core of senior researchers (CS I – CS III) with expertise aligned to the Institute's mission in optoelectronics, materials science, atmospheric physics, and heritage science. The presence of experienced CS I and CS II staff provides scientific leadership and continuity. The structure of the research staff by scientific degrees is well balanced, with an average of 49% senior researchers (CS I, CS II, IDT I, IDT II) and 51% early career researchers (CS III, CS, IDT III, IDT). The distribution of the research staff is as follows: 90 at central unit, 45 at ICIA and 36 at IHP. This distribution reflects the volume of R&D activities and seems to be well balanced. Within the research teams there are also foreign researchers, as well as researchers with stages at foreign institutions. The percentage of researcher with PhD degree reported to the total research staff is significant. The institute promotes internal career development through annual performance evaluations, access to training, involvement in project coordination, and opportunities to supervise laboratory activity and student projects. The senior researchers contributed also to the training of young researchers, through courses held at doctoral schools, mentoring of the students in the research laboratories, and participation as members of tutoring committees in collaborations with major Universities.

COMMENT - WEAKNESSES

More than 50% of staff are over 40 years. The number of young researchers, with the scientific grade of Scientific Researcher (CS) and the total number of researchers under 40 years decreased during the evaluated period. Moreover, the total number of researchers is low, considering the complex structure, departments and laboratories, of the central organization and the two branches.

Indicator V.2 Members in the editorial board of a national/international journal (rated by Web of Science, SCOPUS) or in the editorial board of an established international publishing house; members in an international think tank/expert group at European/global level; members (fellow, senior) of an international scientific society
[max. score: 1]

Score obtained: 0.83

- Analyse how the researchers from the research organization, through their results and their prestige, contribute to increasing the visibility of the research organization, of the Romanian scientific research in the respective applied field, at international and European level.
- For the period under evaluation, evaluate mainly the presence of the researchers from the research organization in the editorial boards of prestigious national and international journals, in the editorial boards of established international publishing houses, in international think tanks/expert groups at European/global level, their membership (fellow, senior) in prestigious international scientific societies in the field.

COMMENT - STRENGTHS

A relevant number of researchers were members of the editorial boards of Web of Science and Scopus indexed journals, both for regular and special issues, and were members of editorial boards of BDI indexed journals, with 98 editorial contributions documented for 2020-2024, contributing to the institute's international visibility. The topics of the journals cover the full spectrum of Institute's research domains. The research staff participated also in international expert groups and committees through European research infrastructures (ACTRIS, E-RIHS), where they act as reviewers, method developers, and working-group members. Membership in various professional and scientific societies supports institutional visibility and contributes to international scientific integration.

COMMENT - WEAKNESSES

Only a small number of researchers are reported to hold permanent editorial board positions in prestigious international journals, many of the contributions corresponding to guest-editing special issues, which has lower long-term visibility. Insufficient evidence is provided concerning membership as Fellow, Senior Member, or equivalent status in major international scientific societies. Participation in global-level think tanks or high-ranking expert committees is limited.

Indicator V.3 Members in the management/scientific board of an international organization or association in the field
[max. score: 1]

Score obtained: 0.67

- Analyse how the research organization and the Romanian scientific research benefit from increased visibility and prestige through the representatives of the research organization in the management/scientific board of prestigious international organizations/associations.
- For the period under evaluation, evaluate mainly the presence of researchers from the research organization in the management/scientific board of prestigious international organizations/associations.

COMMENT - STRENGTHS

The researchers of the Institute hold positions within major European Research Infrastructures, such as ACTRIS and E-RIHS, where they contribute to working groups, methodological committees, and technical coordination activities. These positions provide international visibility and recognition of expertise. The leadership of the ACTRIS CARS Topical Centre implies participation in governance structures related to calibration, standardization, and quality assurance at the European level, which functions similarly to service on scientific boards within RI frameworks.

COMMENT - WEAKNESSES

The self-assessment report does not offer sufficient information concerning the presence of researchers as members of the management board or scientific board of prestigious international research organizations. No examples are provided related to the presence of researchers in executive councils, steering committees, presidium roles, or elected leadership positions within international scientific unions or associations, outside European RI structures.

Indicator V.4 Members/experts in joint committees/working groups of public authorities at national level
[max. score: 1]

Score obtained: 1.00

- Analyse how the research organization, through its researchers, has been involved during the period under evaluation in solving current societal problems.
- For the period under evaluation, mainly evaluate the presence of researchers from the research organization as members or experts in joint working groups/committees set up by public authorities at national level for the substantiation and preparation of draft legislation, strategies and policies, action plans, policy papers, etc.

COMMENT - STRENGTHS

There is a remarkable presence and activity of the researchers in joint committees/working groups of public authorities at national level, particularly in areas such as environmental monitoring, cultural heritage protection, and scientific support for policy-relevant studies (e.g., air quality, climate, conservation diagnostics). During the evaluated period, the researchers of the institution participated as permanent experts or as members in the advisory committees and in the validation commissions of the central public authorities, the Ministry of Research, Innovation and Digitalization, the Ministry of Environment and Regional Development, the Bucharest-Ilfov Regional Development Agency, and contributed to the development of public policies and normative. Collaboration with Ministries and national agencies (environment, culture, research) indicates functional interaction with public authorities, including technical consultations and participation in specialized discussions related to regulations and monitoring standards.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Indicator V.5 Members of a doctoral school; members (fellow, senior) of a national scientific society; members in the scientific/editorial board of a prestigious national journal
[max. score: 1]

Score obtained: 0.50

- Analyse the degree to which the research organization, through its researchers, is recognized in the academic environment and in society for its ability to contribute to the coordination and quality enhancement of the training of doctoral students, to the development of knowledge in the specific research field, to the maintenance of high quality standards and respect for ethics and academic integrity in the specific research field.
- For the period under evaluation, mainly evaluate the membership of researchers from the research organization in doctoral schools as coordinators/mentors, their presence as members in national scientific societies in the specific research field, in scientific/editorial boards of prestigious journals, etc.

COMMENT - STRENGTHS

The Institute is represented in the Council of the Doctoral School of the Faculty of Physics of the University of Bucharest. The researchers of the institution were also members of doctoral theses guidance committees, doctoral theses defense committees, doctoral students' training and mentoring activities, and evaluation committees for academic promotion, in collaboration with several doctoral schools, which reflects recognition of expertise at the national academic level. Several researchers of the institution are members in editorial boards or are reviewers of national journals, in fields such as optics, photonics, materials science, atmospheric physics, and heritage science.

COMMENT - WEAKNESSES

Memberships in national scientific societies, while present, are limited in seniority. The nature and content of the training courses offered by the Institute, mentioned in the self-assessment report, are not sufficient specified.

Indicator V.6 Awards/distinctions/titles
[max. score: 1]

Score obtained: 0.50

- Analyse the extent to which the research organization's prestigious results and researchers have been recognized in the period under evaluation by established national and international forums, state institutions and authorities, international and national scientific societies, universities, following selection processes, etc.
- Evaluate mainly the recognition of researchers' results and their professional prestige by national and international established forums, through awards/distinctions/titles, namely: award of the Romanian Academy; award/distinction granted by state institutions/authorities; award (distinction) of a national scientific society obtained through a selection process; award (distinction) of an international scientific society obtained through a selection process; Doctor Honoris Causa title awarded by a university, etc.
- Note: Awards for research results (PRECISI) will not be considered.

COMMENT - STRENGTHS

The researchers of the evaluated institution received multiple awards and an impressive number of distinctions at many national and international invention fairs (e.g., EUROINVENT, INOVA, PROINVENT, ICAN), reflecting recognition for applied research, prototypes, and technological development. Several patents and experimental developments received medals and diplomas from international juries, demonstrating external recognition for innovation and applied outputs.

COMMENT - WEAKNESSES

No Romanian Academy prizes, national or international societies' awards obtained through competitive academic selection processes, or Doctor Honoris Causa titles are documented for the reporting period.

Criterion VI. STRATEGIC DEVELOPMENT PLAN FOR THE EVALUATED PERIOD AND FOR THE NEXT 5 YEARS

[max. score: 20]

Indicator VI.1 The quality and feasibility of the proposed strategic objectives relative to the research organization's mission and the field in which it operates

[max. score: 10]

Score obtained: 8.00

- Analyse: the feasibility of the strategic objectives and the extent to which the proposed strategic directions support the achievement of these objectives, in line with the research organization's mission; the quality of the institutional strategic plan for the evaluated period and for the following 5 years; the quality of the SWOT analysis of the research organization relative to the environment in which it operates; the extent to which the organization's research directions are aligned with those specific to the national and European research, development and innovation space and to the field in which the research organization operates, and the extent to which the human resources policy is in line with the requirements of the European Charter for Researchers, the Code of Conduct for the Recruitment of Researchers, and the commitment to the Human Resources Strategy for Researchers - HRS4R.
- Evaluate mainly whether the presented objectives are feasible, appropriate and the proposed strategic directions of development support their implementation relative to the research organization's mission, there is a realistic Institutional Strategic Plan and appropriate for the research organization's mission, and there is a high degree of correlation of the specific research directions of the research organization with the specific directions of the national and European research, development and innovation space.
- Evaluate mainly the alignment of the organization's human resources strategy with the requirements of the European Charter for Researchers, the Code of Conduct for the Recruitment of Researchers and the commitment to the Human Resources Strategy for Researchers (HRS4R).

COMMENT - STRENGTHS

The Institutional Strategic Development Plan corresponding to the evaluated period is based on the general objectives of the National Research Innovation and Smart Specialization Strategy and the Horizon Europe program. The last evaluation of INOE 2000 contains seven recommendations and it is useful to examine how successful the institute was to implement them. R1. Avoid dispersion of resources, group activities in 4, 5 categories. This recommendation was successfully implemented by redefining the main R&D directions and by organizing the function of the institute through departments focused on them. R2. Promotion an entrepreneurship, draft rules for spin offs founding. The activity of the CENTI Technology Transfer Center is commendable in reaching out to possible beneficiaries of the applied research mostly of the ICIA branch. R3. Examine drafting of standards as revenue source. The institute, mainly the two subsidiaries, followed a successful policy to leverage their IP rights for follow up projects. R4. Support the increase of PhD advisors. R5. Replace "Physics of high pressure" with "Techniques for high pressure". Done. R6. Assume a more assertive role in the frame of European cooperation activities. Done. R7. Improve the quality of the two own journals. The strategic objectives of the Institute for the evaluated period have been extended for the next five years, in line with the objectives of the Horizon Europe program clusters priorities, especially continued integration in European Research Infrastructures (ACTRIS, E-RIHS), the Green Deal, climate observation, and digital heritage initiatives. The proposed strategic directions are in line with the mission of the research organization, and have well-determined and ambitious specific objectives, focusing mainly on atmospheric science, materials research, and cultural heritage applications. These objectives are realistic and supported by well-defined strategic directions (infrastructure development, digitalization, innovation, human resources). The scientific, financial and research infrastructure SWOT analysis is detailed, the weaknesses as well as the future opportunities for mitigating risks and threats are correctly identified. The analysis accurately reflects the institute's internal situation and external environment, supporting a realistic strategic vision. The institution supports excellence in research by implementing the principles of the European Charter for Researchers and the Code of Conduct for Research Recruitment. Recently, the research organisation started also the process for the implementation of the Human Resources Strategy for Researchers (HRS4R), marking a commitment to align its human resources policies with the European Charter for Researchers and the Code of Conduct for Recruitment, and to obtain the HR Excellence in Research Award. This represents a significant improvement relative to previous HR frameworks.

COMMENT - WEAKNESSES

Implementation of the recommendations of the last evaluation: R1. Avoid dispersion of resources, group activities in 4, 5 categories. None. R2. Promotion an entrepreneurship, draft rules for spin offs founding. No success in promoting spin offs. R3. Examine drafting of standards as revenue source. The successful technology transfer seems to be limited to the two subsidiaries. R4. Support the increase of PhD advisors. That was fully missed. R5. Replace "Physics of high pressure" with "Techniques for high pressure". R6. Assume a more assertive role in the frame of European cooperation activities. None. R7. Improve the quality of the two own journals. No success at all here. Some strategic objectives lack clear KPIs, quantitative targets, or detailed implementation timelines, which makes the assessment of feasibility less robust. The achievement of part of the proposed objectives and results indicators may be challenging due to the diversity of the addressed research domains and the relatively reduced research staff renewal. The diversity of the domains may also limit the interaction and collaboration between different departments. Risk identification is present, but risk-mitigation actions are not systematically integrated into the strategic plan.

Indicator VI.2 The extent to which the scientific and institutional objectives are correlated with relevant trends in the organization's scientific field and societal needs [max. score: 10]	**Score obtained: 10.00**

- Analyse the extent to which the research organization provides an appropriate framework to keep researchers up-to-date with the latest developments in the field, conducive to innovation and technology transfer; the extent to which the scientific and institutional objectives of the research organization are in line with the relevant trends in the scientific field in which it operates and with the real needs of society.
- Evaluate mainly the support for innovation and technology transfer; the initiative to set up an international scientific advisory board of the research organization; a high degree of correlation regarding the scientific and institutional objectives with relevant national and international trends in the organization's scientific field and societal needs.

COMMENT - STRENGTHS

The scientific and institutional objectives of the research organization are consistent with the relevant trends and research directions of the specific scientific fields in which it operates, atmospheric research, cultural heritage science (E-RIHS), photonics, advanced materials, and are well aligned with the European priorities such as the Green Deal, climate services, digital heritage, and smart materials. The research domains of the Institute address societal needs through environmental monitoring, climate-relevant observations, cultural heritage diagnostics, and applied studies for public authorities and industry, demonstrating strong societal relevance. The strategy for development of human resources contains appropriate measures to ensure the continuous improvement of the research expertise of the scientific staff, through internships abroad, summer schools, and participation in international conferences, and collaborations that ensure continuous exposure to state-of-the-art methods and standards. The research activity is also supported by the International Scientific Advisory Board established in 2024, constituted by members of the international scientific community with outstanding achievements in the major research directions of the Institute. The International Scientific Advisory Board contributes to the optimization of the research activity at the research organization and helps to maintain researchers in touch with the latest developments in their fields of activity. The strategic objectives emphasize innovation and technology transfer, supported by certified innovation management processes (SR 13572:2016), patenting activity, and prototype development. The Institute's technology transfer strategy is well developed; the planned measures aim to improve the technology transfer activities and transfer of the research outcomes to the economic sector and will contribute to the achievement of the proposed objectives. The technology transfer is supported through the Technology Transfer Center, accredited by the Ministry of Education and Research.

COMMENT - WEAKNESSES

No significant weaknesses were identified.

Criterion VII. CONCLUSIONS/RECOMMENDATIONS

VII.1 Conclusions/recommendations

- General conclusions and/or recommendations

The overall evaluation shows that INOE is a well-established research organisation, with solid scientific expertise, internationally relevant infrastructure, and strong integration in major European Research Infrastructures, which significantly enhance institutional visibility and scientific impact. The institute demonstrates good capacity to attract national funding, participates effectively in collaborative projects, and offers important public-interest services in environmental monitoring, cultural heritage diagnostics, and applied research. Scientific productivity is consistent, with several highly cited publications and a substantial national patent portfolio. However, international technological impact remains limited due to the small number of international patent applications and the absence of granted international patents. Participation in editorial activities is notable, although predominantly through guest-editing, with fewer permanent positions in prestigious editorial boards. The research infrastructure is strong and mission-aligned, with accredited laboratories and internationally used open-access databases. The main challenges concern human resources sustainability, the institute has no in-house PhD supervisors and a limited pipeline of early-career researchers. Nevertheless, the initiation in 2024 of the HRS4R process is an important and positive step toward improving HR policies. The institutional strategic objectives are generally coherent, aligned with national and European priorities, and feasible within the institute's mission. Further refinement is needed in defining measurable KPIs, risk-mitigation measures, and clearer pathways for strengthening innovation uptake and technology transfer. There is still much to be done to defend this position in the future. Some of the recommendations are linked to the ones from the previous evaluation: R2. Promotion of entrepreneurship, draft rules for spin offs founding – In general, promoting innovation - whether through spin-offs or technology transfer - should occupy a central place in the next period. The success of the two subsidiaries and CENTI should be emulated by the departments belonging to central INOE. R4. Support the increase in the number of PhD advisors - This is a critical issue, as it limits the institute's ability to supervise PhD candidates and to ensure a broad recruitment pool. Considering how up to date the research infrastructure is and how active and involved many of the researchers are, it is difficult to understand the limited interest in obtaining habilitation. Although the challenges in working with some doctoral schools are real, INOE 2000 should proactively seek suitable academic partners. R7. Improve the quality of the two own journals - The institute should aim to enhance the quality of its journals. One possible way is to narrow their scope and increase their level of specialization. Recommendations for the departments of the Institution: • Optoelectronic methods and techniques for rehabilitation and conservation of cultural heritage • Remote Sensing These two departments give central INOE its defining profile, and their activities are among the most successful within the institute. They should try to consolidate their success by adding a more prominent academic side; they should become excellence centers at national and regional level by bringing together their partners. Nurturing international conferences, as a vehicle to increase their visibility is highly desirable. • Constructive and technological engineering-lasers, laser devices and fiber optics • Plasma and vacuum-based technology systems for new advanced nanostructured materials • Optospintronics • Collective optoelectronic methods with biomedical applications The potential of these departments is not fully exploited, and their research objectives are too fragmented. They should try to group further around topics that could bring large European projects. Their researchers should be encouraged to apply for high profile grants, such as ERC ones, and the successful applicants should be given the responsibility to reorganize their departments. • ICIA Branch - analytical instrumentation and advanced analytical methods • IHP Branch - Research Institute for Hydraulics and Pneumatics The two subsidiaries have a well-defined profile and are very successful in technology transfer. They should be encouraged to form research consortia with some of the central laboratories and exploit all synergies to their fullest extent. • Technology Transfer Center Its success should be extended to the whole institute, and they should be given the responsibility, and the means, to coordinate all innovation activities. Further recommendations: 1) Strengthen human resources development. Hiring of scientific staff, early-stage researchers, as well as the increase of the number of doctoral thesis supervisors is necessary, considering the high number of the scientific domains of the institution and the diversity of the provided services. 2) Continue the implementation of HRS4R and align internal policies with the European Charter & Code. 3) Enhance the international visibility of scientific outputs through increased participation in high-impact journals, expansion of permanent editorial roles and presence in international scientific boards, and targeted dissemination strategies. 4) Increase efforts toward technology transfer by strengthening CENTO activities at institute level. 5) Improve strategic planning by defining clearer KPIs, timelines, and risk-mitigation measures, especially regarding infrastructure renewal and HR sustainability. 6) Document and monitor quantitative access indicators for shared infrastructure (number of external users, hours of access, joint experiments). 7) Encourage greater formal representation in national committees to enhance institutional prestige and societal engagement.

Total Score: 169,16

Evaluator 1 : BARSAN NICOLAE

Signature: ____

Evaluator 2 : LUPU NICOLETA

Signature: ___

Evaluator 3 (Rapporteur): GYORGY ENIKO

Signature: ________________